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Tenth Annual Report
OF THE
BOARD OF HEALTH.



1881 - 82.

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TENTH ANNUAL REPORT

OF THE

BOARD OF HEALTH

OF THE

CITY OF BOSTON,

FOR THE

Financial Year 1881-82.



BOSTON:

ROCKWELL AND CHURCHILL, CITY PRINTERS,

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1882.

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[DOCUMENT 87 — 1882.]

CITY OF BOSTON.



TENTH ANNUAL REPORT

OF THE

BOARD OF HEALTH

OF THE

CITY OF BOSTON,

FOR THE FINANCIAL YEAR 1881-1882.

OFFICE OF THE BOARD OF HEALTH,
32 PEMBERTON SQUARE, BOSTON, May 1, 1882.

To the Honorable the Mayor and City Council of Boston: —

In accordance with the city ordinances the Board of Health herewith respectfully submits its tenth annual report, for the year ending April 30, 1882.

THE CITY'S SANITARY CONDITION.

The sanitary condition of the city for the past year, as indicated by the statistics of the more prevalent diseases and mortality, is, all things considered, satisfactory. As we shall have frequent occasion to point out in the following pages, the city is by no means without many and serious shortcomings in its sanitary appliances; but, notwithstanding these, our citizens have good reason to congratulate themselves on the comparative healthfulness of the city. An examination of the tables of mortality of nearly all the principal cities throughout the country for the past year shows a marked increase in

their respective death-rates, from one cause or another, and the year is generally regarded as having been less healthful than usual. In many sections of the country small-pox was allowed to gain a considerable foothold, and in many cities and towns this disease contributed largely to the death-rate. Notwithstanding the increased mortality in so many cities of the country, the death-rate of Boston shows a gratifying decrease from that of the year previous, as well as from the average rate for several years past. There has been nothing approaching an epidemic in the city, and there has been a notable falling off in the percentage of deaths arising from preventable causes. The death-rate of Boston for the year, as calculated from the number of death certificates presented at this office, was 22.67 per thousand of the estimated population. In 1880 the rate per thousand was 23.53. The average death-rate of Boston from all causes for the past seventeen years, from 1865 to 1881 inclusive, was 23.88 per thousand. The proportion of deaths from preventable causes to the whole number of deaths, which is a better index of the comparative sanitary condition of the city, shows a corresponding decrease. In 1880 the percentage of deaths from preventable causes was 27.20; in 1881 the percentage was 26.87. The average percentage of deaths from preventable causes for the ten years, from 1872 to 1881 inclusive, was 28.40.

The shifting adult population of our great cities makes it exceedingly difficult to ascertain, with exactness, the comparative rate of mortality for any given year; and it is maintained with good reason, that the best method of determining whether an increase or a decrease in the death-rate is due to an absolutely greater or less mortality, or only to one relatively greater or less, is to compare the number of deaths of children in any given year with those of preceding years. Taking this method of computation as a test of the comparative mortality, the rate is shown to be even more favorable. The percentage of deaths of children under five years of age for the year 1881 was 36.75. In 1880 the percentage was 39.25. The average percentage of deaths of this class for the past ten

years was 40.75, and the records show that there has been a gradual diminution in the percentage of deaths of children under five years of age from 42.17 in 1872 to 36.75 in 1881. In other words, while the total mortality has increased with the growing population from 8,090 deaths in 1872 to 9,016 deaths in 1881, the deaths of children under five years have absolutely decreased from 3,414 in 1872 to 3,314 in 1881, showing that while the total mortality has increased nearly one thousand, the mortality among children has decreased one hundred. During the same period the total number of births recorded in the city increased from 9,321 in 1872 to 10,541 in 1881.

In calculating the death-rate for 1881 the population of Boston has been estimated at 397,628, which is an increase of about 35,000 over the population as returned by the census of 1880. It will be conceded by those best qualified to judge of the matter that this estimate of the population is rather under than over the actual figures. In response to an inquiry on this subject, Mr. Thomas Hills, Chairman of the Boston Board of Assessors, has kindly furnished the following table, showing the proportion of the city's population to the assessed polls for the past twenty-five years:—

Year.	State Census.	U. S. Census.	Assessed Polls, males above 20 years.	Proportion Population to Polls.
1855	161,429	. . . .	31,602	5 19-100
1860 . . . . .	. . . .	177,840	34,449	5 16-100
1865	192,324	. . . .	34,704	5 54-100
1870 . . . . .	. . . .	292,499	58,322	5 7-100
1875	341,919	. . . .	85,243	4 1-100
1880 . . . . .	. . . .	362,839	93,820	3 87-100
1881 . . . . .	. . . .	. . . .	99,407	

In the figures of 1870 and subsequent years the polls and population added by annexations are included. With such figures as are shown in the above table, Mr. Hills thinks it reasonable to conclude that, although the census years of 1875

and 1880 were seasons of business depression, which would be seasons of low population, the census of 1880 could not have been accurately taken. The enumeration of polls is substantially, if not actually, correct. The name, place of residence, and occupation of each person that represents a poll can be shown, and the names of non-residents in the lists are more than offset by polls liable to assessment, but not reported. Mr. Hills thinks that if the assessed polls of a given year in the last decade be multiplied by $4\frac{1}{4}$ the product would be below the sum of the actual population of Boston. During the year 1881 business was exceptionally good, labor was well employed, and the large increase of polls indicated that our population was returning. The great scarcity of houses to let, and the large number of buildings, especially tenement-houses, which were erected during the year, and the fact that they were occupied as soon as completed, afforded additional evidence, if any were needed, of the great rapidity with which the population increased after the census was taken. The lowest proportion that can reasonably be accepted, in Mr. Hill's opinion, is four inhabitants to each poll, and that would make the population of the city in 1881 about 400,000, or exactly 397,628, which is the basis on which the death-rate for the year has been estimated. This estimated increase in the population of the city should be borne in mind also in considering the comparative prevalence of diseases, as well as of defects in sanitary appliances.

MORTALITY.

The number of death certificates presented at this office for approval during the year ending Dec. 31, 1881, exclusive of still-births, was 9,016. The number of still-births whose certificates were presented for approval for the same period was 513.

The following tables, which pertain to our own city, are compiled from the records of this office, which began in 1875, and from those of the City Registrar prior to that date. Those which pertain to other American and foreign cities, and which are used here for convenient reference and com-

parison, are made from the official returns of the officers in charge of the vital statistics in the several cities represented.

Table I.—Total Deaths, Still-births, and Deaths from Zymotic Diseases, for the last Ten Years, with Percentages.

YEARS.	Total deaths, exclusive of still-births.	Still-births.	Total Zymotics.	Diphtheria and Croup.	Scarlet Fever.	Typhoid Fever.	Cerebro-Spinal Fever.	Whooping cough.	Measles.	Diarrhoeal Diseases.	Small-pox.	Percentage of Zymotic deaths to total mortality.	Rate of still-births per 1,000 inhabitants.
1872	8,090	560	2,823	94	258	229	60	52	60	1,006	738	34.89	1.91
1873	7,869	515	2,626	119	474	243	216	33	16	925	302	33.37	1.76
1874	7,812	642	1,899	121	269	202	35	108	41	940	2	24.30	2.19
1875	9,060	541	2,722	631	534	227	41	41	65	989	1	30.02	1.58
1876	8,253	485	2,439	720	458	145	13	59	2	827	2	29.55	1.41
1877	7,316	471	1,890	471	104	156	24	88	2	913	4	25.83	1.87
1878	7,636	441	1,980	569	68	120	19	88	145	816	..	25.91	1.28
1879	7,398	453	1,935	545	149	119	15	112	2	772	..	26.15	1.24
1880	8,531	443	2,321	774	33	154	8	94	49	1,003	1	27.20	1.23
1881	9,016	513	2,423	802	35	207	16	77	108	870	6	26.87	1.29

Table II.—Total Number of Deaths under Five Years, Five Years and over, for the last Ten Years, with Percentages to the total Mortality.

YEARS.	Total Deaths.	Five Years and over.	Under Five Years.	Percentages.	
				Five Years and over.	Under Five Years.
1872	8,090	4,676	3,414	57.77	42.17
1873	7,869	4,580	3,289	58.20	41.79
1874	7,812	4,464	3,358	57.01	42.98
1875	9,060	5,088	3,972	56.15	43.84
1876	8,253	4,722	3,531	57.21	42.78
1877	7,316	4,334	2,982	59.24	40.76
1878	7,636	4,630	3,006	60.76	39.36
1879	7,398	4,593	2,805	62.08	37.91
1880	8,531	5,182	3,349	60.74	39.25
1881	9,016	5,702	3,314	63.24	36.75

Table III.—Deaths During the Year 1881.*By Sex, Condition, Color, Nativity, Parentage, and Season.*

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Total number of deaths . .	834	728	772	767	660	594	718	940	808	767	693	737	9,016
<i>Sex :</i>													
Males	406	365	375	362	319	285	365	501	420	405	363	361	4,527
Females	428	361	397	405	341	309	353	439	388	362	330	376	4,489
<i>Condition :</i>													
Married	221	199	214	252	219	170	190	196	206	214	234	228	2,543
Single	510	441	471	403	364	355	467	673	533	467	384	403	5,471
Widows	79	64	58	80	54	43	39	54	45	49	44	85	694
Widowers	19	18	24	21	15	16	16	12	16	29	25	15	226
Unknown	5	4	5	11	8	10	6	5	8	8	6	6	82
<i>Color :</i>													
Whites	817	712	750	745	647	583	698	919	781	750	669	721	8,792
Colored	17	14	22	22	13	11	20	21	27	17	24	16	224
<i>Nativity :</i>													
United States	586	524	548	512	431	416	534	710	580	518	450	468	6,277
Ireland	155	117	138	156	141	95	108	139	139	163	163	168	1,682
Scotland	3	4	5	8	5	5	5	4	3	5	4	3	54
England	15	9	10	21	12	12	10	11	6	20	9	13	148
Germany	8	12	11	11	12	11	7	13	11	8	8	18	130
British Provinces	42	38	39	36	36	40	27	34	36	32	39	46	445
Other Countries	12	9	15	16	15	10	14	10	18	15	12	10	156
Unknown	13	13	6	7	8	5	13	19	15	6	8	11	124
<i>Parentage :</i>													
American	221	211	234	229	181	180	183	236	182	188	188	183	2,416
Irish	310	263	284	288	252	200	267	358	317	302	283	321	3,445
Scotch	9	7	6	9	8	6	10	7	4	7	4	8	85
English	21	16	12	23	13	16	15	13	16	18	15	13	191
German	25	23	30	19	19	14	14	31	20	19	20	23	257
British Provinces	30	36	36	32	33	38	33	44	48	42	40	46	458
Mixed	83	66	59	70	54	51	64	104	87	68	52	51	809
Other Countries	77	42	61	45	54	50	60	83	60	64	41	38	675
One parent known . . .	9	12	13	10	8	12	34	24	17	22	21	8	190
Unknown	49	50	37	42	38	27	38	40	57	37	29	46	490

Table IV.—Deaths from Principal Zymotic Diseases.

	Total deaths from each cause.	Percentage of each cause to total mortality.	Deaths per 1,000 inhabitants.	Total deaths per sex.		Total deaths per sex under five years.		Total deaths under five years.	Percentage of each cause under five years to total mortality.
				M.	F.	M.	F.		
Small-pox	6	.066	.015	5	1	3	...	3	.033
Measles	108	1.197	.271	47	61	42	53	95	1.053
Scarlatina	35	.388	.088	15	20	12	12	24	.266
Diphtheria	601	6.665	1.511	306	295	191	178	369	4.092
Croup	201	2.229	.505	103	98	86	83	169	1.874
Whooping-cough	77	.854	.193	25	52	24	49	73	.809
Typhoid Fever	207	2.295	.530	104	103	7	3	10	.111
Enteritis	61	.676	.153	24	37	15	22	37	.410
Erysipelas	42	.465	.105	19	23	7	8	15	.166
Puerperal Fever	68	.754	.173	...	68	...	...	...	...
Carbuncle	5	.055	.012	4	1	...	...	...	...
Dysentery	96	1.064	.241	41	55	27	19	46	.510
Diarrhœa	235	2.606	.591	126	109	111	92	203	2.251
Cholera Morbus	16	.177	.040	6	10	1	3	4	.044
Cholera Infantum	444	4.924	1.116	240	204	240	204	444	4.924
Cerebro-spinal Fever	16	.177	.040	11	5	6	3	9	.099
Intermittent Fever	3	.033	.007	3	...	...	...	...	...
Remittent Fever	4	.044	.010	2	2	...	1	1	.011
Rheumatism	41	.454	.103	16	25	...	...	...	...
Pyæmia	14	.155	.035	6	8	...	1	1	.011
Syphilis Congenital	20	.221	.050	9	11	11	11	22	.243
Syphilis Tertiary	8	.088	.020	5	3	...	...	...	...
Purpura	5	.055	.012	1	4	...	2	2	.022
Alcoholism	74	.820	.186	49	25	...	...	...	...
Septicæmia	11	.122	.027	7	4	...	...	...	...
Entero-colitis	18	.199	.045	12	6	10	7	17	.188
Thrush	1	.011	.002	...	1	...	1	1	.011
Gangrene	2	.022	.005	2	...	1	...	1	.011
Scurvy	1	.011	.002	1	...	...	...	...	...

Table V.—Deaths from Ten of the Principal Causes.

	Total deaths from each cause.	Percentage of each cause to total mortality.	Deaths per 1,000 inhabitants.	Total deaths per sex.		Total deaths per sex under five years.		Total deaths under five years.	Percentage of each cause under five years to total mortality.
				M.	F.	M.	F.		
Consumption	1,564	17.820	3.933	723	841	37	84	71	.787
Pneumonia	684	7.586	1.720	358	326	133	103	236	2.617
Diphtheria	601	6.665	1.511	306	295	191	178	369	4.092
Heart Disease	465	5.157	1.169	219	246	11	7	18	.199
Cholera Infantum	444	4.924	1.116	240	204	240	204	444	4.924
Accidental and Violent . .	371	4.114	.933	286	85	30	11	41	.454
Bronchitis	345	3.826	.867	174	171	132	107	239	2.650
Marasmus, Tabes, Mesenterica, and Scrofula . . .	271	3.005	.684	144	127	133	117	250	2.772
Cancer	241	2.673	.606	89	152	1	. . .	1	.011
Diarrhoea	235	2.606	.591	126	109	111	92	203	2.251

Table VI.—Aggregate and Average Age and Parentage of Decedents.

1901.	American Parentage.			Foreign Parentage.			Mixed Parentage.			One Parent Known.			Unknown.			Total of all Parentages.		
	Number of Deaths.	Aggregate Age.	Average Age.	Number of Deaths.	Aggregate Age.	Average Age.	Number of Deaths.	Aggregate Age.	Average Age.	Number of Deaths.	Aggregate Age.	Average Age.	Number of Deaths.	Aggregate Age.	Average Age.	Number of Deaths.	Aggregate Age.	Average Age.
January . . .	221	6,063	30.15	472	13,237	28.04	83	506	6.09	9	168	18.66	49	1,940	39.59	884	22,513	25.99
February . .	211	7,238	34.54	385	10,008	25.99	66	680	10.30	14	85	6.07	50	1,711	34.22	726	19,772	27.23
March	234	7,458	31.87	429	12,008	27.99	59	512	8.67	13	209	16.08	37	1,802	48.70	772	21,990	28.48
April	229	8,538	37.34	416	13,277	31.91	70	897	12.81	10	233	23.30	42	1,907	45.40	767	24,851	32.40
May	181	6,297	34.79	379	11,450	30.47	54	554	10.26	8	5	.62	38	1,676	44.10	660	20,081	30.43
June	190	6,145	34.14	324	9,044	27.91	51	482	9.45	12	43	3.58	27	1,409	52.18	604	17,123	28.83
July	183	4,992	26.79	399	9,890	24.79	64	354	5.53	34	293	8.62	38	1,283	33.76	718	16,722	23.29
August	234	5,234	22.39	536	11,709	21.82	104	617	5.93	24	33	1.38	40	1,312	32.80	940	18,947	20.16
September . .	182	4,896	26.90	465	11,245	24.18	87	420	4.83	17	331	19.47	57	2,049	35.94	808	18,941	23.44
October	188	5,413	28.80	452	12,860	28.45	68	556	8.17	23	129	6.86	37	1,617	43.70	767	20,574	26.82
November . . .	188	6,127	32.59	403	12,463	32.39	52	608	11.69	21	331	15.76	29	1,388	47.86	693	21,507	31.03
December . . .	183	5,779	31.57	449	14,276	31.79	51	731	14.33	8	224	28.00	46	2,066	44.91	737	23,076	31.31
Total	2,416	74,790	30.86	5,109	142,120	27.82	809	6,917	8.51	192	2,084	10.85	490	20,160	41.43	9,016	246,097	27.29

Table VII. — Difference in Years between the average Age of Decedents of Mixed, Foreign, and American Parentage.

Months.	1881.					
	Average Age.		Difference.	Average Age.		Difference.
	American.	Foreign.		American.	Mixed.	
January	30.15	28.04	2.11	30.15	6.09	24.06
February	34.54	25.99	8.55	34.54	10.30	24.24
March	31.87	27.99	3.88	31.87	8.67	23.20
April	37.24	31.91	5.33	37.24	12.81	24.43
May	34.79	30.47	4.32	34.79	10.26	24.53
June	34.14	27.91	6.23	34.14	9.45	24.69
July	26.79	24.79	2.	26.79	5.53	21.26
August	22.39	21.82	.57	22.39	5.93	16.46
September	26.90	24.18	2.72	26.90	4.83	22.07
October	28.80	28.45	.35	28.80	8.17	20.63
November	32.59	32.59	.20	32.59	11.69	20.90
December	31.57	31.79	.22	31.57	14.33	17.24
Total	30.96	27.82	3.14	30.96	8.51	22.45

Table VIII. — Aggregate of the average Age of Decedents of American, Foreign, and Mixed Parentage for each Quarter of the Year 1881.

Parentage.	First Quarter.	Second Quarter.	Third Quarter.	Fourth Quarter.
American	96.56	106.17	76.08	92.96
Foreign	82.02	90.29	70.79	92.63
Mixed	25.06	32.52	16.29	34.19

Table IX. — Ten of the Principal Causes of Death, by Sex, and Month, with Nativity of Parents.

	Jan.		Feb.		Mar.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total.		Nativity of Parents.					Total.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	American.	Foreign.	Mixed.	One Parent known.	Unknown.			
Consumption . .	58	76	62	59	65	78	55	76	62	84	54	62	46	63	56	65	63	67	77	58	69	64	56	89	723	841	283	1144	66	12	59	1,564
Pneumonia . . .	42	38	43	29	44	34	45	51	34	25	16	10	9	14	15	15	13	17	24	36	34	42	44	358	326	181	395	63	6	39	684	
Diphtheria . . .	43	43	37	30	33	32	30	27	20	20	20	20	18	18	13	17	26	17	22	26	24	17	18	18	306	295	196	307	91	3	4	601
Cholera Infantum	1	..	..	..	..	..	..	..	2	..	..	..	..	53	52	108	88	54	47	18	3	..	1	1	240	204	112	240	61	25	6	444
Heart Disease . .	22	21	19	22	17	22	17	29	15	19	19	16	22	14	12	20	6	20	28	18	25	19	17	26	219	246	133	261	23	5	43	465
Accidental and Violent	18	4	10	7	20	7	12	9	24	7	26	5	31	9	45	5	25	7	27	11	22	6	26	8	286	85	73	208	19	4	67	371
Bronchitis	31	21	20	20	20	26	17	15	11	14	12	9	5	5	5	7	7	12	10	8	13	14	23	20	174	171	74	225	32	4	10	345
Typhoid Meenter-ice, Marasmus and Scrofula . .	8	9	13	5	8	13	7	8	6	10	12	13	5	14	27	20	16	18	21	11	14	9	7	2	144	127	73	168	43	22	25	271
Cancer	6	21	9	10	10	14	6	10	4	11	6	11	8	12	10	11	10	9	7	13	7	16	6	14	89	162	88	128	5	3	17	241
Diarrhoea	6	..	..	1	5	2	1	2	2	..	1	2	19	14	39	38	22	18	21	19	5	9	5	4	126	109	48	119	40	17	11	235

Table X.—Deaths from Principal Zymotic Diseases, by Sex, and Month, with Nativity of Parents.

	Jan.		Feb.		March.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total.		Nativity of Parents.					Total.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	American.	Mixed.	One Parent Known.	Unknown.		
Small-pox . . . . .	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	3	..	1	1	..	..	5	1	3	..	..	..	6	
Measles	10	22	11	9	9	18	8	7	4	1	2	1	1	..	..	..	1	..	1	3	..	..	..	..	47	61	31	55	18	1	3	108
Scarlatina	2	1	1	3	1	2	5	3	..	3	2	3	2	1	..	2	1	1	..	..	..	..	1	1	15	20	12	16	7	..	..	35
Diphtheria	43	43	37	30	33	32	32	30	20	27	20	20	18	18	13	17	26	17	22	26	24	17	18	18	306	295	196	307	91	3	4	601
Croup	13	18	12	13	10	10	8	12	4	9	12	4	5	4	6	4	5	5	12	5	10	9	7	5	103	98	45	122	30	3	1	201
Whooping-cough . . .	..	5	1	5	..	3	1	2	..	1	2	1	2	1	6	5	5	12	4	8	3	4	1	5	25	52	20	38	15	3	1	77
Typhoid Fever . . .	6	10	7	6	4	3	5	5	2	6	4	1	7	4	8	10	21	22	11	12	16	13	13	11	104	103	52	130	9	..	16	207
Enteritis	1	3	..	2	1	1	..	1	..	2	1	3	4	6	5	9	5	4	3	4	2	2	2	..	24	37	13	38	6	3	1	61
Erysipelas	2	3	4	6	1	5	2	1	3	2	..	..	1	..	2	..	1	..	..	1	2	2	1	3	19	23	17	22	..	1	2	42
Puerperal Fever . . .	..	6	..	14	..	6	..	9	..	3	..	7	..	4	..	3	..	2	..	5	..	7	..	2	..	63	17	46	1	1	3	63
Carbuncle . . . . .	..	..	..	..	..	1	..	..	..	..	..	2	..	..	..	..	1	1	..	..	..	..	..	..	4	1	3	1	..	..	1	6
Dysentery	2	1	1	..	1	..	..	2	..	3	3	3	5	5	15	17	5	11	6	10	3	2	..	1	41	55	21	57	12	1	5	96
Diarrhoea	6	..	..	1	5	2	1	2	2	..	1	2	19	14	39	38	22	18	21	19	5	9	5	4	126	109	48	119	40	17	11	235
Cholera-morbus . . .	..	..	..	..	..	..	..	..	..	..	..	1	..	5	2	3	2	1	2	..	..	..	..	..	6	10	3	10	1	1	1	16
Cholera Infantum . .	1	..	..	..	..	..	..	..	2	..	..	..	53	52	108	83	54	47	18	16	3	..	1	1	240	204	112	240	61	25	6	444

Table XI.—Deaths from Principal Zymotic Diseases arranged by Age and Sex.

	Under 1 yr.		1 yr. and under 2 yrs.		2 yrs. and under 3 yrs.		3 yrs. and under 4 yrs.		4 yrs. and under 5 yrs.		5 yrs. and under 10 yrs.		10 yrs. and under 20 yrs.		20 yrs. and under 30 yrs.		30 yrs. and under 40 yrs.		40 yrs. and under 50 yrs.		50 yrs. and under 60 yrs.		60 yrs. and under 70 yrs.		70 yrs. and under 80 yrs.		80 yrs. and under 90 yrs.		90 yrs. and under 100 yrs.		Total of all ages.			
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.		M.	F.	
Small-pox	1	1					1				3			3	1	1			1												5	1		
Measles	19	13	11	19	8	9	3	9	1	3	42	53	4	5		1	3														47	61		
Scarlatina	2	3	1		3	3	5	4	1	2	12	12	3	7				1													15	20		
Diphtheria	18	12	36	46	58	46	45	37	34	37	191	178	86	81	22	24	2	4	3	1	4	1									306	235		
Croup	17	10	23	23	21	27	15	17	10	6	86	83	16	13	1	2															103	98		
Whooping-cough	9	22	8	15	2	6	4	3	1	3	24	49	1	3																	25	52		
Typhoid Fever			2	1	3	1	2	1			7	3	4	6	22	23	36	37	14	16	12	7	3	3	4	4	2	4			104	103		
Enteritis	11	19	3	2	1	1					15	22	1	4	1	2	3		3	1	2			1	2		3	1			24	37		
Erysipelas	6	6	1	2							7	8			2	2		3	1		1	4	3	1	2	1	5	1	1		19	23		
Puerperal Fever															4		29		30		5										68			
Carbuncle																						1		1	1		1				4	1		
Dysentery	10	6	11	11	6	2					27	19	1	4	2	1	1	3	3	1	2		8	3	2	2	9	1	4			41	55	
Diarrhea	102	77	7	11	2	2					1	111	92	1	2		1	1	1	3	1		1	4	3	5	6	3			126	109		
Cholera-morbus	2											1	3						2	1	3	1		1			2				6	10		
Cholera Infantum	189	158	42	37	4	7	8	1	2	1	240	204																			240	204		
Cerebro-spinal Fever	1	3			3		1	1			6	3		2	4				1												11	5		

[illegible]

Table XII.—Ten of the Principal Causes of Death, arranged by Age and Sex.

	1 yr. and under 1 yr.		2 yrs. and under 2 yrs.		3 yrs. and under 3 yrs.		4 yrs. and under 4 yrs.		5 yrs. and under 5 yrs.		10 yrs. and under 10 yrs.		20 yrs. and under 20 yrs.		30 yrs. and under 30 yrs.		40 yrs. and under 40 yrs.		50 yrs. and under 50 yrs.		60 yrs. and under 60 yrs.		70 yrs. and under 70 yrs.		80 yrs. and under 80 yrs.		90 yrs. and under 90 yrs.		Over 100 years.		Total of all ages.				
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.			
Consumption	19	18	7	10	6	3	3	2	2	1	37	34	6	13	58	94	214	261	176	190	103	114	75	66	41	38	13	25	6	6	6	6	723	841	
Pneumonia	80	48	27	30	15	14	6	3	5	8	133	103	3	15	8	9	25	21	38	25	48	38	37	27	40	35	21	33	5	17	2	2	1	368	826
Diphtheria	18	12	36	46	58	46	45	37	34	37	191	178	86	81	22	24	2	4	4	3	1	4	1	1	1	1	1	1	1	1	1	1	306	295	
Cholera Infantum	189	158	42	37	4	7	3	1	2	1	240	204	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	240	204	
Heart Disease	9	7	1	1	1	1	1	1	1	11	7	2	10	18	12	15	20	23	28	34	39	42	43	42	38	41	7	9	1	1	1	219	246		
Accidental and Violent	10	2	9	2	6	5	4	1	2	30	11	10	7	19	4	59	13	47	7	51	12	38	6	18	10	10	3	4	1	1	1	286	85		
Bronchitis	85	69	34	30	5	4	5	3	3	132	107	2	3	2	1	2	4	6	2	5	6	7	10	15	13	13	2	12	1	1	1	174	171		
Malaria, Typhus Mesenterica, and Scrofula	104	94	20	15	6	6	2	2	1	133	117	4	1	1	1	1	2	3	1	1	1	2	2	1	1	1	1	1	1	1	1	144	127		
Cancer	102	77	7	11	2	2	2	1	1	111	92	1	2	1	1	1	2	4	8	17	10	29	21	41	28	36	13	18	5	5	1	1	89	153	
Diarrhoea	102	77	7	11	2	2	2	1	1	111	92	1	2	1	1	1	1	1	3	1	1	1	1	1	4	3	5	5	3	1	1	1	126	109	

Table XIII. — The Number and Percentages of Deaths in each Quarter of each Year during a Period of Seventeen Years, 1865–1881, inclusive.

YEARS.	FIRST QUARTER.		SECOND QUARTER.		THIRD QUARTER.		FOURTH QUARTER.		Rate per 1,000 inhabitants.
	Deaths.	Per cent.	Deaths.	Per cent.	Deaths.	Per cent.	Deaths.	Per cent.	
1865	1,115	24.55	1,088	23.52	1,353	29.80	1,005	22.13	23.6
1866	999	22.81	957	21.85	1,338	30.56	1,085	24.78	22.4
1867	1,071	24.22	950	21.49	1,191	26.94	1,209	27.35	22.3
1868	1,341	24.30	1,203	21.80	1,786	31.45	1,239	22.45	23.9
1869	1,374	24.88	1,297	23.48	1,562	28.28	1,290	23.36	23.4
1870	1,395	22.88	1,314	21.55	1,983	32.52	1,406	23.05	24.3
1871	1,411	23.97	1,299	22.06	1,842	31.28	1,336	22.69	23.
1872	1,697	20.97	1,777	21.97	2,511	31.04	2,105	26.02	31.80
1873	2,115	26.88	1,726	21.93	2,278	28.95	1,750	22.24	30.27
1874	1,805	23.11	1,818	23.27	2,278	29.16	1,911	24.46	24.9
1875	2,190	24.45	1,909	21.31	2,680	29.92	2,179	24.32	24.95
1876	2,246	27.21	1,809	21.91	2,375	28.77	1,823	22.08	23.39
1877	1,723	25.55	1,613	22.04	2,317	31.67	1,683	22.73	20.15
1878	1,743	22.82	1,744	22.83	2,174	28.47	1,975	25.86	21.03
1879	1,947	26.30	1,615	21.83	1,959	26.43	1,877	25.37	20.88
1880	2,015	23.62	1,829	21.45	2,500	29.30	2,187	25.63	23.53
1881	2,332	25.86	2,021	22.41	2,466	27.34	2,197	24.38	22.67

Table XIV.—Total Deaths each Quarter for the last Five Years, with the Aggregate and Average Number from 1872 to 1876, inclusive.

	1877.	1878.	1879.	1880.	1881.	5 years, 1872-1876.	
						Aggregate.	Average.
First Quarter	1,723	1,743	1,947	2,015	2,332	10,053	2,011
Second Quarter . . .	1,613	1,744	1,615	1,829	2,021	9,039	1,808
Third Quarter	2,317	2,174	1,959	2,500	2,466	12,123	2,425
Fourth Quarter . . .	1,663	1,975	1,877	2,187	2,197	9,768	1,954
Total for each year	7,316	7,636	7,398	8,531	9,016	40,983	8,197

Table XV.—Total Deaths and Percentages each Quarter for the Year 1881, with Aggregates and Percentages for the Ten Years previous.

	1881.		1871-1880.	
	Deaths.	Per cent.	Deaths.	Per cent.
First Quarter	2,332	25.36	18,892	24.29
Second Quarter	2,021	22.42	17,139	22.04
Third Quarter	2,466	27.36	22,914	29.48
Fourth Quarter	2,197	24.36	18,816	24.19
Totals	9,016	100.00	77,761	100.00

Table No. XVI. — Parentage of Children under One, Two, and Five Years for each Month during the Year 1881.

	JANUARY.			FEBRUARY.			MARCH.			APRIL.			MAY.			JUNE.		
	Under 1 yr.	1 yr. and under 2 yrs.	2 yrs. and under 5 yrs.	Under 1 yr.	1 yr. and under 2 yrs.	2 yrs. and under 5 yrs.	Under 1 yr.	1 yr. and under 2 yrs.	2 yrs. and under 5 yrs.	Under 1 yr.	1 yr. and under 2 yrs.	2 yrs. and under 5 yrs.	Under 1 yr.	1 yr. and under 2 yrs.	2 yrs. and under 5 yrs.	Under 1 yr.	1 yr. and under 2 yrs.	2 yrs. and under 5 yrs.
United States	49	12	22	35	11	15	39	13	23	24	13	19	26	10	13	28	9	21
Foreign	76	31	55	65	29	48	64	33	47	51	24	36	55	18	32	39	14	29
Mixed	35	13	19	23	12	12	22	12	9	21	9	10	17	10	9	20	7	11
One parent known	6	..	1	11	..	..	8	..	2	4	..	1	6	2	..	11	..	..
Unknown	5	1	..	11	..	1	1	1	1	2	..	1	..	2	1	3	..	..

	JULY.			AUGUST.			SEPTEMBER.			OCTOBER.			NOVEMBER.			DECEMBER.		
	Under 1 yr.	1 yr. and under 2 yrs.	2 yrs. and under 5 yrs.	Under 1 yr.	1 yr. and under 2 yrs.	2 yrs. and under 5 yrs.	Under 1 yr.	1 yr. and under 2 yrs.	2 yrs. and under 5 yrs.	Under 1 yr.	1 yr. and under 2 yrs.	2 yrs. and under 5 yrs.	Under 1 yr.	1 yr. and under 2 yrs.	2 yrs. and under 5 yrs.	Under 1 yr.	1 yr. and under 2 yrs.	2 yrs. and under 5 yrs.
United States	53	10	11	101	15	6	49	8	13	52	18	15	37	10	7	40	13	17
Foreign	85	37	23	171	37	33	125	37	26	83	22	25	52	15	18	59	25	31
Mixed	37	5	6	63	14	6	43	14	12	34	9	4	21	6	8	15	3	13
One parent known	25	..	..	21	1	..	8	1	1	20	..	..	11	2	1	3	1	..
Unknown	7	..	..	12	1	1	5	2	..	4	..	..	2	1	..	6	..	..

Table XVII. — Comparison of Vital Statistics of Cities in the

CITIES OF UNITED STATES.	Population by census.	When taken.	Population estimated in 1881.	Births reported.	Marriages reported.	Still-births reported.	Total number of deaths.	Annual death-rate per 1,000 population.	Small-pox.	Measles.
New York, N.Y. . . .	1,206,577	June, 1880	1,242,533	26,130	10,077	2,462	38,624	31.08	451	429
Brooklyn, N.Y.	566,689	June, 1881	585,220	10,893	3,935	975	14,533	24.83	35	56
Chicago, Ill.	503,304	1880	540,000	?	?	642	13,830	25.61	858	111
Boston, Mass.	362,535	1880	397,628	10,541	3,901	513	9,016	22.67	6	108
St. Louis, Mo.	350,522	1880	370,000	8,055	?	668	8,410	22.7	5	27
Baltimore, Md.	332,190	June, 1880	393,796	8,507	3,452	651	8,816	22.37	11	75
Cincinnati, Ohio	261,000	1880	280,000	c7,072	c2,001	375	6,101	21.7	61	79
San Francisco, Cal. . .	234,000	1880	260,000	2,177	?	?	4,178	18.25	70	8
New Orleans, La. . . .	216,140	1880	218,000	2,834	1,298	353	6,406	29.63	5	26
Hudson Co., N.J. . . .	187,950	1880	193,940	3,413	1,388	305	5,233	27.	219	14
Cleveland, Ohio	185,000	1881	?	?	?	243	3,727	20.14	1	32
District of Columbia . .	177,038	1880	183,060	3,430	773	361	4,504	24.6	2	9
Pittsburgh, Pa.	156,781	June, 1880	165,000	4,310	1,777	200	4,493	27.23	448	46
Providence, R.I.	104,857	1880	107,500	2,810	1,205	161	2,145	19.95	...	25
Indianapolis, Ind. . . .	75,074	1880	77,700	?	?	97	1,774	22.	1	3
Richmond, Va.	63,803	1880	66,000	1,908	540	161	2,049	31.04	150	14
New Haven, Conn. . . .	62,882	1880	66,000	1,982	594	68	1,261	19.10	2	...
Lowell, Mass.	59,485	1880	62,500	1,840	787	25	1,287	20.59	...	4
Toledo, Ohio	56,015	Jan., 1882	55,000	c880	631	79	972	17.30	...	...
Cambridge, Mass. . . .	52,740	1880	53,500	1,512	589	33	1,136	21.2	...	2
Fall River, Mass. . . .	49,006	1881	49,006	1,879	582	?	1,354	27.62	1	4
St. Paul, Minn.	42,560	?	50,000	2,249	639	46	143	22.86	...	5
Wilmington, Del. . . .	42,499	1880	46,500	c588	c136	46	1,341	28.08	120	3
Lynn, Mass.	38,284	1880	40,000	932	512	36	800	20.00	...	1
Utica, N. Y.	33,923	1880	34,196	745	c135	40	472	11.65	...	...
Springfield, Mass. . . .	33,340	1880	35,000	872	398	23	662	18.9	...	...
Manchester, N.H. . . .	32,458	1880	35,000	?	?	?	711	20.	...	12
Savannah, Ga. {	White	19,114	?	?	?	27	453	23.67	...	...
	Colored	15,765	?	?	?	110	708	30.16	...	...
Erie, Pa.	27,730	1880	30,000	?	?	54	549	17.3	...	...
New Bedford, Mass. . .	26,875	1880	?	?	?	?	546	20.30	1	...

United States, for the Year ending December 31, 1881.

Scarlatina.	Diphtheria.	Croup.	Whooping-cough.	Typhus Fever.	Typhoid Fever.	Cerebro-Spinal Fever.	Cholera.	Relapsing Fever.	DIARRHOEAL DISEASES.		Phthisis Pulmonalis.	Pneumonia.	Bronchitis.	Total deaths of children under 5 years of age.	Percentage of deaths of children under 5 years of age to the total mortality.
									Children under 5 years of age.	Total of all ages.					
1,964	2,249	1,038	286	160	446	461	..	..	3,709	4,270	5,812	3,261	1,511	17,737	45.92
651	1,169	438	118	..	99	77	..	..	1,492	1,706	1,754	1,022	471	6,866	47.23
189	611	400	158	16	578	285	..	..	?	?	1,043	454	143	7,406	58.54
35	601	201	77	..	207	16	..	..	751	870	1,564	684	345	8,314	36.75
108	157	68	61	..	192	314	..	..	686	881	913	474	?	3,540	42.09
215	639	242	93	3	197	37	..	..	769	907	1,206	466	106	3,919	44.45
60	105	61	37	..	183	73	..	..	?	531	904	330	140	?	?
11	53	21	19	..	90	25	..	..	70	84	600	308	89	1,136	27.19
197	92	27	1	..	66	26	..	..	417	795	900	327	153	2,015	31.45
163	180	119	16	4	111	43	..	..	?	536	574	395	83	2,047	46.00
90	188	122	16	..	180	..	..	..	489	509	210	166	96	?	?
23	105	49	21	..	111	14	..	..	410	492	818	317	91	1,846	40.99
382	210	36	37	..	248	110	..	..	363	410	849	221	71	2,132	47.45
45	116	49	41	..	38	11	..	..	148	163	344	173	53	727	33.89
14	28	18	5	..	86	69	..	..	?	?	230	52	24	717	40.50
...	16	12	35	..	72	8	1	..	?	190	281	83	20	822	40.11
9	559	?	3	1	28	6	..	..	65	71	223	105	29	380	30.13
9	27	44	..	1	53	25	..	1	?	?	235	83	27	493	38.30
9	28	22	10	..	9	5	..	..	?	95	105	285	?	339	34.87
1	79	19	8	..	22	6	..	..	110	122	179	108	27	462	40.66
3	17	50	12	..	36	..	..	..	?	62	130	43	52	?	?
9	126	9	5	..	93	40	..	..	118	122	43	40	23	504	44.0
39	24	36	9	1	43	2	..	..	65	75	193	34	9	516	38.47
6	50	12	2	..	24	..	..	..	41	51	153	59	2	272	34.00
7	9	7	1	3	5	7	..	..	?	?	61	24	14	?	?
10	16	5	2	..	23	18	..	..	44	55	98	51	20	205	30.96
34	13	11	9	..	54	1	..	..	?	76	..	14	4	?	?
...	41	4	..	..	2	12	..	..	?	19	54	16	..	158	34.8
...	7	1	10	..	4	6	..	..	?	53	99	57	12	295	41.9
2	50	11	6	24	?	68	..	..	87	..	80	46	..	248	45.12
9	3	?	?	?	?	?	..	..	?	?	?	?	?	?	?

Table XVII. — Comparison of Vital Statistics

CITIES OF UNITED STATES.	Population by census.	When taken.	Population estimated in 1881.	Births reported.	Marriages reported.	Still-births reported.	Total number of deaths.	Annual death-rate per 1,000 population.	Small-pox.	Measles.
Somerville, Mass. . . .	26,359	?	?	.....	...	33	459	17.4	...	2
Salt Lake, Utah	20,768	1880	?	?	?	16	532	28.0	...	...
Yonkers, N.Y.	19,000	1880	20,000	420	200	32	379	18.	...	4
Bangor, Me.	16,857	1880	?	?	?	2	392	23.2	...	...
Lynchburg, Va.	15,959	1880	20,240	...	163	60	539	26.6	...	1
Concord, N.H.	14,000	?	?	273	118	11	240	17.07	...	...
Knoxville, Tenn. . . .	13,988	1880	16,000	348	?	29	274	17.12	...	11
Newburyport, Mass. . .	13,800	1880	?	382	154	9	290	21.	...	...
Nashua, N.H.	13,397	1880	13,600	363	214	2	234	17.2	...	...
Aurora, Ill.	12,000	1880	13,000	?	?	6	186	14.30	...	...
Burlington, Vt.	11,364	1880	11,500	354	87	21	205	18.04	...	...

EXPLANATIONS. — ? Information not furnished.

a Brochitis included.

of Cities in the United States. — *Concluded.*

Scarlatina.	Diphtheria.	Croup.	Whooping-cough.	Typhus Fever.	Typhoid Fever.	Cerebro-Spinal Fever.	Cholera.	Relapsing Fever.	DIARRHOEAL DISEASES.		Phthisis Pulmonalis.	Pneumonia.	Bronchitis.	Total deaths of children under 5 years of age.	Percentage of deaths of children under 5 years of age to the total mortality.
									Children under 5 years of age.	Total of all ages.					
1	44	7	8	..	8	2	..	..	..	5	56	56	8	?	?
8	47	10	28	..	82	3	..	..	?	84	32	49	6	298	51.2
20	6	1	..	..	1	1	..	..	32	51	56	24	20	151	40.0
..	26	10	..	..	?	..	..	..	?	?	84	35	..	68	17.33
..	6	..	2	..	12	5	..	..	35	50	52	21	16	217	40.2
8	3	1	..	..	6	2	..	..	?	10	34	36	4	57	23.75
4	1	5	2	..	13	9	..	..	?	?	38	27	2	101	27.12
..	2	4	2	..	7	3	..	..	4	8	44	14	3	70	24.13
..	..	2	..	..	10	..	..	..	?	88	31	13	1	68	29.06
..	3	2	..	..	5	..	..	..	22	24	20	13	1	70	37.63
2	5	2	2	..	2	5	..	..	17	18	25	7	7	91	44.39

b Croup included.

c Incomplete.

d Typhoid fever included.

e During 11 months.

Table XVIII.—Comparison of Vital Statistics of Foreign

FOREIGN CITIES.	Population by census.	When taken.	Population estimated in 1881.	Births reported.	Marriages reported.	Still-births reported.	Total number of deaths.	Annual death-rate per 1,000 inhabitants.	Small-pox.	Measles.
London, England . .	3,816,483	April, 1881	3,831,719	182,674	34,331	?	81,071	21.2	2,371	2,638
Liverpool " . .	552,508	1881	554,073	20,762	?	?	14,733	26.6	34	756
Salford, Borough of, England	176,233	1881	177,755	7,300	?	?	4,000	22.5	7	38
Newcastle upon Tyne, Borough of, England .	145,675	1881	?	5,833	?	?	3,168	21.7	10	35
Bolton, Borough of, England	105,414	1881	?	3,811	?	57	2,022	19.1	...	1
Portsmouth, Borough of, England	127,953	1881	128,332	4,389	1,282	?	2,515	19.6	...	7
Birkenhead, Borough of, England	84,006	1881	84,404	3,059	?	?	1,461	17.30	...	49
Merthyr-Tydfil, Wales.	48,857	April, 1881	49,000	1,728	?	?	1,355	27.6	...	3
Edinburgh, Scotland . .	236,333	1881	...	7,299	2,018	?	4,607	20.11	1	11
Glasgow, " . .	510,816	1881	704,436 ¹	19,077	4,769	?	12,902	25.2	2	354
Dundee, " . .	142,270	April, 1881	142,454	5,002	3,346	?	2,965	20.84	1	1
Dublin, Ireland	249,603	1881	250,070	7,981	?	?	7,296	29.2	9	148
Belfast, "	27,671	1881	209,000	6,912	1,625	?	4,911	23.	25	14
Paris, France	2,239,928	1881	?	60,856	20,993	4,831	57,066	25.5	1,041	925
Havre, "	92,068	1876	103,963	3,273	853	188	3,232	31.0	278	15
Venice, Italy	132,826	1881	133,941	3,777	792	189	3,580	22.5	35	...
Verona, "	?	?	70,357	1,951	444	192	1,996	28.3	31	18
Bologna, "	115,984	1871	123,558	3,320	846	153	3,379	27.3	2	73
Berlin, Germany . . .	1,122,330	1880	1,139,995	43,475	11,149	1,771	31,055	27.27	54	201
Dortmund, " . .	66,550	1880	66,550	3,210	638	114	1,803	27.09	...	6
Köln, " . .	144,738	1880	146,767	5,463	1,295	220	3,869	26.4	...	7
Barmen, " . .	95,000	1880	96,000	3,905	?	180	2,126	22.35	...	28
Crefeld, " . .	73,872	1880	77,152	3,339	652	122	2,008	26.027	...	11
Mainz, " . .	61,328	1880	?	1,996	440	132	1,431	23.33	...	5
Stuttgart, " . .	106,441	...	107,000	3,626	739	159	2,310	21.58	1	22
Nuremberg, " . .	99,517	1880	101,370	3,581	813	175	2,664	26.2	...	57
Elberfeld, " . .	93,600	1880	96,000	3,854	838	166	2,080	21.9	...	8

¹ Including suburbs.

Cities for the Year ending December 31, 1881.

Scarlatina.	Diphtheria.	Croup.	Whooping-cough.	Typhus Fever.	Typhoid Fever.	Cerebro-spinal Fever.	Cholera.	Relapsing Fever.	DIARRHOEAL DISEASES.		Phthisis Pulmonalis.	Pneumonia.	Bronchitis.	Total deaths of children under five years of age.	Percentage of deaths of children under five years of age to the total mortality.
									Children under five years of age.	Total of all ages.					
2,108	654	695	1,961	96	977	?	.	.	2,742	3,148	8,312	4,167	9,874	33,325	41.1
435	50	143	402	143	120	...	.	.	451	508	1,291	930	2,627	6,613	44.9
84	20	?	180	256	?	...	.	.	138	153	451	6989	?	1,799	44.9
52	6	15	70	20	38	...	.	.	83	149	294	110	299	1,248	39.3
31	2	13	119	8	19	...	2	.	72	90	174	123	341	881	43.5
25	205	30	66	...	51	...	.	.	59	72	275	80	254	964	88.2
20	5	9	45	12	11	...	.	.	28	37	120	90	149	592	40.5
251	...	...	4	...	6	...	.	.	7	7	135	6234	?	489	36.
253	42	35	166	21	59	...	9	.	58	77	461	181	549	1,691	36.7
225	175	146	405	50	175	...	15	.	144	200	1,573	780	2,137	5,363	41.56
42	4	34	99	11	22	...	1	.	?	78	390	208	498	1,118	38.
88	20	?	49	176	87	?	?	?	?	94	875	?	?	?	?
34	23	?	123	16	78	?	.	16	?	165	773	61,214	?	?	?
447	2,326	?	489	...	2,121	2,529	.	14	5,062	5,512	9,575	4,006	4,357	17,448	30.58
6	2142	...	39	...	48	...	.	1	290	318	496	177	125	1,179	36.4
5	55	...	...	66	...	...	.	.	...	...	361	643	?	1,260	35.0
4	15	5	3	9	60	49	.	9	32	53	190	111	84	585	29.30
4	27	47	10	...	96	19	.	.	154	173	346	335	207	1,314	38.9
903	1,593	185	405	...	340	12	.	1	4,865	5,047	3,770	1,773	69	17,728	57.09
71	86	7	9	32	7	...	.	.	92	97	310	131	129	938	52.36
339	278	?	19	46	...	...	.	1	91	?	556	235	126	1,174	30.3
89	266	?	51	42	1	...	.	.	?	?	347	6215	?	1,039	48.80
91	283	?	23	227	?	...	.	.	55	70	315	250	...	1,101	54.83
21	20	11	32	17	...	...	.	.	123	134	220	103	47	618	43.18
14	67	41	14	...	15	2	.	.	242	250	296	206	30	1,157	50.08
99	64	43	22	...	34	14	.	.	245	249	514	6280	?	1,270	47.7
65	38	?	23	31	...	59	.	.	?	128	452	6171	?	963	53.30

Comparison of Vital Statistics

FOREIGN CITIES.	Population by cen- sus.	When taken.	Population esti- mated in 1881.	Births reported.	Marriages reported.	Still-births re- ported.	Total number of deaths.	Annual death rate per 1,000 inhabi- tants.	Small-pox.	Measles.
Breslau, Germany . .	272,912	1880	275,000	10,405	2,455	517	8,927	32.46	3	9
Bremen, " . .	111,940	1880	113,600	3,915	?	116	2,436	21.4	2	142
Dresden, " . .	220,818	1880	223,100	7,820	2,091	348	5,617	25.18	6	23
Augsburg, " . .	61,410	1880	62,400	2,175	437	77	1,895	30.4	. . .	31
Chemnitz, " . .	95,123	1880	97,239	4,381	982	147	3,293	32.47	. . .	2
Königsberg, " . .	140,932	1880	141,000	4,961	?	152	4,330	30.3	71	2
Altona, " . .	91,050	1880	92,550	3,646	795	168	2,221	24.0	1	35
Strassburg, " . .	104,471	1880	106,000	3,720	773	139	3,138	29.6	. . .	129
Posen, " . .	65,663	1881	65,663	2,286	501	85	2,047	31.02	. . .	73
Rotterdam, " . .	148,102	1880	187,270	5,913	1,286	332	3,568	22.68	3	25
Mannheim, " . .	?	?	53,465	1,863	?	63	1,217	22.76	. . .	6
Hamburg, " . .	453,869	1880	457,215	17,764	4,050	586	11,140	24.54	10	162
Düsseldorf, " . .	?	?	97,408	3,863	?	177	2,271	23.32	. . .	4
Magdeburg, " . .	?	?	98,000	3,418	782	147	2,471	34.0	?	?
Frankfort-on-Main, Ger- many	?	?	139,710	4,270	1,234	154	2,653	19.0	. . .	7
Aachen, Germany . .	85,720	1880	86,230	3,507	743	144	2,479	28.7	79	57
Cassel, " . .	58,293	1881	60,793	1,661	425	118	1,372	23.5	. . .	3
Braunschweig, Germany	75,038	1880	75,945	2,764	?	92	1,853	24.39	. . .	60
München, " . .	236,000	1882	233,000	9,117	1,637	279	7,570	32.5	24	81
Ghent, Belgium . . .	134,852	1880	134,852	4,538	1,089	147	3,465	25.6	13	40
Antwerp, "	179,034	1880	185,580	6,875	1,542	294	4,351	23.4	103	39
Buda-Pesth, Hungary .	370,767	1880	378,159	13,193	3,145	754	13,055	34.5	442	90
Christiana, Norway . .	122,036	1881	120,737	4,338	983	178	2,305	19.09	3	125
Stockholm, Sweden . .	?	?	167,868	?	?	?	4,088	24.4	. . .	13
Geneva, and suburbs, Switzerland	68,320	1880	68,718	1,687	?	79	1,451	21.3	1	1
Vienna, Austria . . .	726,105	1880	730,911	29,021	6,297	1,406	21,549	29.48	906	106
Trieste, "	141,333	1880	142,654	5,028	1,166	938	4,554	30.08	28	41
Prague, Bohemia, Aus- tria	155,818	1880	158,918	6,712	1,549	321	4,851	31.13	109	70
Cracow, Austrian Poland	66,946	1880	67,000	2,148	491	53	2,573	38.4	93	110
Copenhagen, Denmark	234,850	1880	246,000	9,268	2,331	225	5,267	21.39	4	6
Amsterdam, Holland .	317,011	1879	326,203	11,974	2,603	738	7,739	23.72	3	13
Utrecht, " . .	67,633	1876	69,219	2,597	579	152	1,765	25.4	. . .	10

of Foreign Cities. — *Continued.*

	Scarlatina.	Diphtheria.	Croup.	Whooping-cough.	Typhus Fever.	Typhoid Fever.	Cerebro-spinal Fever.	Cholera.	Relapsing Fever.	DIARRHOEAL DISEASES.		Phthisis Pulmonalis.	Pneumonia.	Bronchitis.	Total deaths of children under five years of age.	Percentage of deaths of children under five years of age to the total mortality.
										Children under 5 years of age.	Total of all ages.					
168	97	61	57	..	101	...	...	...	...	1,097	1,376	642	596	52	4,578	51.28
16	d29	..	10	a15	?	...	...	...	...	?	180	450	b346	?	1,141	46.8
70	353	28	58	a41	?	...	...	...	...	432	447	816	323	29	2,602	46.32
5	d75	?	3	..	9	...	...	...	...	196	213	190	b168	?	998	52.64
27	d90	?	18	23	...	...	...	...	...	?	?	302	92	14	2,072	62.9
5	d263	?	28	68	106	...	...	...	...	?	639	372	b422	?	2,158	49.80
25	47	12	53	a32	...	...	...	...	...	203	210	338	b376	?	1,069	46.1
21	d202	?	31	..	45	...	...	...	...	562	583	349	293	199	1,498	47.0
31	33	?	24	..	...	98	...	...	...	113	199	211	b182	?	993	48.51
8	9	14	46	4	9	...	...	...	2	35	47	336	329	226	1,758	49.27
16	d23	?	22	27	...	...	...	...	...	?	134	232	b149	?	613	50.4
135	d307	?	230	c134	...	...	...	...	...	887	901	1,429	b1,159	?	5,235	47.0
96	d88	?	11	..	23	...	...	...	...	...	168	301	b177	?	1,096	48.26
?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	1,348	54.5
31	38	8	68	..	16	2	...	...	...	226	235	500	160	107	1,128	42.51
61	d68	?	10	..	28	...	...	...	...	?	127	360	b228	?	1,320	53.25
15	d29	?	32	..	31	...	...	...	...	36	58	267	88	59	497	28.0
2	23	18	33	1	19	...	...	...	...	?	154	254	114	114	897	48.46
211	d394	?	99	..	43	...	...	...	...	1,130	?	903	b544	?	4,052	53.5
18	18	19	45	60	...	...	...	...	...	678	720	...	512	?	1,536	44.3
31	14	41	56	..	160	...	...	...	...	402	446	501	b616	?	2,050	47.0
266	234	180	92	a344	...	...	...	...	...	?	1,451	2,863	b1,201	?	5,951	45.58
20	18	42	59	..	9	...	...	...	...	166	181	425	151	164	1,011	43.8
96	141	79	19	2	40	...	...	...	...	354	277	696	568	185	1,517	37.1
2	d48	?	8	a51	?	...	...	...	...	114	?	249	152	?	?	?
286	383	156	100	a171	?	...	...	...	...	1,365	1,429	5,087	1,745	470	8,223	38.16
75	d223	?	45	..	33	...	...	...	...	...	24	915	219	185	2,109	46.3
95	57	16	59	91	...	...	...	...	1	395	459	1,036	292	65	1,911	39.39
70	d94	?	36	75	40	9	...	...	...	185	216	306	b603	?	973	37.6
82	62	63	118	..	40	...	...	...	...	250	258	756	329	229	2,253	42.77
36	28	76	166	24	68	...	...	...	...	891	484	788	635	574	3,560	46.
..	...	7	15	a11	?	...	...	...	...	?	68	165	120	136	826	46.79

Comparison of Vital Statistics

FOREIGN CITIES.	Population by census.	When taken.	Population estimated in 1881.	Births reported.	Marriages reported.	Still-births reported.	Total number of deaths.	Annual death-rate per 1,000 inhabitants.	Small-pox.	Measles.
Rotterdam, Holland . .	148,102	1879	157,270	6,093	1,286	332	3,568	24.80	3	25
The Hague " . .	113,460	1879	123,499	4,718	981	214	2,759	24.07	. . .	23
Calcutta, India	433,219	1881	433,219	7,458	?	502	13,030	30.	133	114
Madras, "	397,552	1871	406,117	16,025	?	549	15,487	38.9	1,654	299
Ottawa, Province of Ontario, Canada . . .	27,341	1881	?	502	319	22	777	28.4	1	1
Montreal, Province of Quebec, Canada . . .	140,747	1881	143,000	?	?	?	3,888	27.18	5	12
Toronto, Province of Ontario, Canada . . .	86,445	1881	86,445	2,726	883	94	1,690	19.5	. . .	2

EXPLANATIONS. — ? Information not furnished. *a* Typhoid fever included. *b* Bronchitis included.

of Foreign Cities. — *Concluded.*

Scarlatina.	Diphtheria.	Croup.	Whooping-cough.	Typhus Fever.	Typhoid Fever.	Cerebro-spinal Fever.	Cholera.	Relapsing Fever.	DIARRHEAL DISEASES.		Phthisis Pulmonalis.	Pneumonia.	Bronchitis.	Total deaths of children under five years of age.	Percentage of deaths of children under five years of age to the total mortality.
									Children under 5 years of age.	Total of all ages.					
8	9	14	46	a13	?	?	...	...	30	41	336	5329	?	1,727	52.79
26	12	20	46	a22	?	?	...	...	68	80	219	5331	?	1,382	58.68
..	14	84	59	4	569	...	c1,063	c1,318	236	1,491	482	118	139	4,239	32.5
..	..	..	..	..	..	..	126	..	..	..	..	..	..	7,770	50.1
7	74	16	7	..	8	18	...	...	312	326	74	17	24	320	41.1
47	163	77	69	2	103	22	...	...	547	568	403	156	140	2,175	55.94
9	44	38	18	a57	...	4	...	2	106	121	174	81	56	755	44.7

c Doubtful. d Croup included. e Cerebro-spinal fever included. f Children under 6 years.

Table XIX. — Cases reported, and Deaths from Small-pox, Diphtheria, Scarlet Fever, and Typhoid Fever, with Percentages.

DATE.	SMALL-POX.		Percentages.	DIPHTHERIA.		Percentages.	SCARLET FEVER.		Percentages.	TYPHOID FEVER.		Percentage.
	Cases.	Deaths.		Cases.	Deaths.		Cases.	Deaths.		Cases.	Deaths.	
1872.	2,592	738	28.4	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
1873.	1,103	302	27.3	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
1874.	3	1	33.3	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
1875.	7	1	14.2	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
1876.	1	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
1877. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	1,334	104	7.7	. . . . .	. . . . .	. . . . .
1878. . . . .	. . . . .	. . . . .	. . . . .	1,370	448	32.7	848	68	8.0	. . . . .	. . . . .	. . . . .
1879. . . . .	. . . . .	. . . . .	. . . . .	1,167	391	33.5	951	149	15.6	. . . . .	. . . . .	. . . . .
1880.	7	1	14.2	1,715	588	34.2	497	33	6.6	From Oct. 1st to Dec. 31st.	From Oct. 1st to Dec. 31st.	. . . . .
1881.	42	6	14.2	1,680	601	35.7	383	35	9.1	335	76	26.8

SMALL-POX.

It is now nine years since the subsidence of the epidemic of small-pox which prevailed in this city in the winter of 1872-3. Scattering cases occurred following the epidemic, three or four per month, until August, 1873, and from that date to October, 1881, a period of over eight years, only twenty-seven cases and two deaths occurred from this disease in this city. This is the longest period of such exemption from small-pox that the city has ever experienced.

Early in October last a case, which was contracted in another city, occurred at the South End. It was unrecognized and unreported by the attending physician until many persons had contracted the disease and they in turn had extended the disease to others. As soon, however, as the cases were discovered effectual measures were taken and the spread of the disease checked.

Other cases were from time to time imported from different places, and between October 8th and January 1st thirty-three cases and five deaths occurred.

In January there were seven cases and two deaths; in February seven cases and two deaths; in March, six cases and one death; and in April, three cases and one death. The whole number of cases for the financial year, ending April 30th, was sixty-five. Of the sixty-five cases reported thirty-six were males and twenty-nine were females; thirteen were children and fifty-two were adults. There were twelve unvaccinated persons among the number. Five were revaccinated at the time of exposure. In regard to the revaccination of the other cases there was no evidence that they had been successfully revaccinated at any time. Those who were revaccinated at the time of exposure had very mild attacks of the disease. Nine out of the twelve unvaccinated persons died, while only four died out of the fifty-three vaccinated.

Thus the proportion of deaths is seventy-five per cent. in the unvaccinated, and seven and one half per cent. in the vaccinated. We append a tabulated statement of these

cases, showing their location, the source of the contagion, etc.

The head nurse, Mr. Powers, who has been in this service for the last sixteen years, has been discovered to be a good photographer; and, with the consent of the patients, several excellent photographs have been obtained at different stages of the disease. The opportunities for seeing photographs of this kind are so rare that we have thought it well to publish herewith one taken on the eleventh day of the eruption, which shows in a marked degree the typical umbilicated pustules, on the legs, in a severe case of discrete small-pox. The entire surface of the skin presented the same appearance except on the face, where the eruption was confluent. This patient was discharged perfectly well at the end of twenty-four days, with comparatively little pitting. In fact the man was well some considerable time before he left; but as a few crusts remained on the skin, and as he was sure to convey contagion thereby, he was kept at the hospital until all chance of danger had been removed. In very many of the cases, particularly the mild ones, the patients are isolated for some time after they have recovered, for this reason.



Table showing Cases of Small-pox in Boston, during the Year ending April 30, 1882.

LOCALITY.	Sex.		Total.	Not vaccinated.	Vaccinated.				Adults.	Treated in Hospital.	Not treated in Hospital.	Recovered.	Died.	Remaining in Hospital.	Disease traced.	SOURCE OF CONTAGION.
	Male.	Female.			In infancy.	Revaccinated.	At time of exposure.	Children.								
Ward 2 .	1 .	1 1	1	1	..	..	..	..	1 1	..	..	..	1 1	..	..	From rags.
" 5 .	1 1	1 1	1	1	..	..	..	..	1 1	1	..	..	1	..	..	From rags.
" 6 .	1 1	1 1	1	1	..	..	..	..	1 1	1	..	..	..	..	..
" 7 .	1 1	2 1	1	1	..	..	1	..	2 2	1 1	..	..	1	..	..	Exposure to a case.
" 8 .	5 .	5 .	5	5	..	..	..	..	5 5	5	..	..	1	..	..	Exposure to a case.
" 9 .	1 .	1 .	1	1	..	..	..	..	1 1	..	..	..	1 1	..	..	Exposure to a case in Phila.
" 10 .	1 .	1 .	1	1	..	..	..	..	1 1	..	..	..	1 1	..	..	Exposure to a case in Phila.
" 12 .	1 1	2 .	2	2	..	..	..	1 1	2 .	2 .	..	..	..	..	..
" 13 .	5 4	9 2	7	7	..	..	..	1 8	8 1	6 3	..	..	4	..	..	One exposure to a case in N.Y.
" 14 .	2 2	4 1	3	3	..	..	..	1 3	4 .	3 1	..	..	..	..	..	One exposure to a case in N.Y.
" 16 .	3 2	5 1	4	4	..	..	..	1 4	5 .	3 2	..	..	..	..	..	Two from rags.
" 18 .	6 6	6 .	6	6	..	..	3	6	6 .	6 .	..	..	2	..	..	Exposure to a case.
" 19 .	11 7	18 5	13	13	..	..	..	8 10	15 .	14 4	..	..	12	..	..	Exposure to a case.
" 21 .	2 1	3 .	3	3	..	..	..	3 2	1 3	..	..	..	..	..	..
" 22 .	1 1	2 .	2	2	..	..	..	2 2	1 1	1	..	..	1	..	..	Exposure to a case in N.Y.
" 24 .	1 2	3 1	2	2	..	..	1	1 2	1 2	2 1	..	..	1	..	..	Exposure to a case in N.Y.
" 25 .	1 .	1 .	1	1	..	..	..	1 1	1 .	1	..	..	1	..	..	Exposure on shipboard in N.Y.
	36 29	65 12	53	..	..	..	5	13 52	61	4 49	13	3	27	..	..

SMALL-POX HOSPITAL.

Several improvements have been made in and about the hospital grounds and buildings during the past year. The old wall on the rear of the lot being inadequate to the proper protection of the grounds, a barbed wire fence was erected upon it, and this proves efficient and satisfactory. Some internal improvements in the hospital wards have been made, to perfect their adaptation to the requirements of all classes of small-pox patients. Double windows were found necessary in cold weather, from the exposed position of

the hospital, and have been placed upon both the north and south wards, at an expense of \$105.20. The entire outside of the hospital, the barn, and picket-fence in front and on the southerly side of the grounds, have been repainted with two coats of best lead and linseed-oil paint, at an expense of \$475. Telephonic communication has been perfected between the hospital, the office of the Board of Health, and the office of the City Physician ; so that the Superintendent, with his ambulance, or the City Physician, can be summoned without delay when an emergency arises. The old ambulance having become dilapidated and unfit for further use, a new one has been constructed on the most approved pattern and of the best materials. It is so arranged that patients can be conveyed in a sitting or recumbent position, as the exigencies of the case may require. It is furnished with a set of runners, which can be substituted for wheels when deep snows cover the ground. It was built by the well-known carriage-builder, Joseph F. Pray, at an expense of \$675.

Mr. and Mrs. Powers continue in the charge of the hospital ; and, having had a long and varied experience in the care of small-pox patients, give entire satisfaction to all who come under their charge. We believe no better hospital of the kind exists in this country ; nor one where the patients receive better medical care and nursing. In the comparatively large number of cases that have been treated during the past year it has been a great satisfaction that we had such accommodations and attendance for the relief of the patients.

VACCINATION.

The number of cases did not constitute an epidemic of small-pox, but served to arouse the inhabitants to the necessity of vaccination, which was at once advised and provided for by the Board of Health. Ten offices were opened in convenient localities, as follows : —

One in East Boston.

One in Charlestown.

Two in the City Proper.

Two in South Boston.
One in Dorchester.
One in Roxbury.
One in West Roxbury.
One in Brighton.

These places were well advertised, and the best physicians and the best bovine virus were supplied free to all who would come and be vaccinated or revaccinated. The City Council was asked for an additional appropriation of \$10,000 for the purpose, which was granted. Between October 1 and March 1, 25,340 persons were vaccinated or revaccinated, at a cost of twenty-four and three-quarter cents each. It is to be regretted that, owing to the large number of persons who crowded the offices in the evening, and the haste with which much of the work had to be done, no complete account of the results was obtained except in one or two offices. In the City Physician's office, which was open a portion of the day and for two hours in the evening, the cases of those who came during the day were recorded with care by the Assistant City Physician, and these furnish some interesting data.

A record is kept of those vaccinated, showing the following points: name; age; whether inoculated for the first time or reinoculated, and the number of trials before success is attained; dates of previous inoculations, the number of scars resulting therefrom and their character; the method employed; the virus used; and the result. It was hoped that in this way some information might be obtained regarding the amount of protection enjoyed against small-pox, by such people as avail themselves of the facilities afforded by the city for free vaccination,—a class in the community most liable to exposure to the disease; and also possibly as to the existence of any relationship between successful vaccination and the evidences of previous vaccination.

Unfortunately the number of persons applying for vaccination has been at times so great as to render it impracticable, from want of time, to make the above records in all cases. Consequently it was necessary to omit them on the days

when the numbers were the greatest, and thus much material was lost.

It appears that of those revaccinated,— that is, of those who had been inoculated at least once before,— records were kept in over twenty-eight hundred cases, showing the number of scars in each case. Analyzing them we have the following result:—

TABLE I.

	Number Vaccinated.	Per cent.
Three (or more) scars	500	17.34
Two scars	1,016	35.34
One scar	1,330	46.26
No scar	29	1.06
Total	2,875	100.00

Classifying the cases according to the character of the scars is less satisfactory, as it becomes then a matter of opinion, instead of fact, as to how a scar shall rank; and different vaccinators having different standards there is great liability to error in the comparison of results. Furthermore, it is necessary, for the sake of simplicity, to place a person having one good scar, and say two fair ones, in the same class with a person having only one good scar, and yet the two fair scars must count for something. Still, taking the results as they are, and considering two good scars sufficient, we give the following table of 2,881 cases:—

TABLE II.

	Number Vaccinated.	Per cent.
Two (or more) good scars	1,040	36.06
One good scar	990	34.33
Fair scars only	392	13.60
Poor scars only	430	14.92
No scars	29	1.09
Total	2,881	100.00

Again, the cases may be studied from the stand-point of time. It is generally conceded that a person who has been vaccinated in infancy should be revaccinated on arriving at puberty, or fifteen years of age; that is, that within fifteen years the protective power of vaccination has sufficiently degenerated, as a rule, to require revaccination. Deducting from the total number of cases in which the time of the last inoculation was recorded (3,666) those who were fifteen year old or under (1,646) there remain 2,020 cases for analysis.

TABLE III.

	Total number Vaccinated.	Per cent.
Over fifteen years old, and not vaccinated within fifteen years.	916	45.4
Over fifteen years old, and vaccinated within fifteen years, or for the third time	1,104	54.6
Total	2,020	100.0

From these tables we are able to obtain, in a general way, some knowledge of the amount of protection enjoyed by the poorer class in the community. Statistics, gathered from many sources, have shown that the fatality from small-pox varies according to the number and character of the scars; that the percentage of deaths amongst those having few and poor scars is greatest, while it steadily diminishes with the number and improvement in their character. This fact has thus been stated by Seaton, one of the best authorities on vaccination, from an analysis of nearly five thousand cases of small-pox occurring in the London Small-pox Hospital. The tables themselves are well-known. "Let an unvaccinated person contract small-pox, and the chances are more than one in three that he dies; let a very badly vaccinated person (a person with an imperfect cicatrix) contract small-pox, and the chances are not quite one in eight that he dies; let a person with two good vaccine cicatrices have small-pox, and his chances of dying are less than one in forty; but

persons who have been vaccinated in the best and most complete way will, if they ever get small-pox afterward, not die of it much more than at the rate of one in two hundred. The small-pox death risks of no vaccination are to the death risks of the very worst vaccination as three to one; to the death risks of the best vaccination as seventy to one; and a well-vaccinated person has not one-twentieth part of the risk of dying from small-pox that a badly vaccinated person has."

Statistics from the same hospital show that the fatality amongst those having only one vaccine scar is 7.73 per cent.; while amongst those having four or more such scars it is .55 per cent.; or the chances of dying, of a person having only one scar, are fourteen times as great as those of a person with four or more.

Viewed from this stand-point, it would appear that, judging from the number of scars, only five hundred and twenty-seven in every thousand of those applying for revaccination were well protected, including, even in this class, those with two scars; while four hundred and seventy-two in every thousand, or nearly one-half, were poorly protected.

Judging from the character of the scars, and admitting two good ones to be sufficient protection, it appears that 360.6 in every thousand were well protected, and 639.4 in every thousand poorly protected.

Again, looking at this question from the point of time, and assuming that within fifteen years the protective power has diminished sufficiently to require revaccination, we find that four hundred and fifty-four in every thousand had not been vaccinated within this period.

Allowance, however, must be made for the fact that since the introduction of dried animal virus, and the use of the scarifier instead of the lancet, a scar of large size is often produced, representing a group of vesicles, or so-called compound vesicles. One or two such scars must certainly be equivalent to four or five of the ordinary size, resulting from a single vesicle. On this account the above tables require considerable modification; but, after making due

allowance for this circumstance, the general results it is believed will remain about the same.

But the question arises, how far can these conclusions be applied to the remainder of the community of the same class; or, in other words, what proportion of such people requiring revaccination applied to have it done, and how many remain who still require it?

The cases above tabulated may be taken as a fair sample of the poorer classes, and there can be little doubt that, notwithstanding the large number vaccinated during the past winter, it represents only a comparatively small proportion of those still remaining who are in need of vaccination: It would require too much space, however, to detail the reasons for this conclusion here. Suffice it to say that it is founded upon personal observation amongst the poorer classes.

For those, however, who are unwilling to admit the soundness of the above reasoning from the character and number of the cicatrices we may look at the question in another way.

There is one fact well established, and that is, that, as a general rule, the protecting influence of vaccination diminishes with every succeeding year, and that a person after puberty is much less protected than before, if the vaccination has been done in infancy. Consequently all experts agree upon the necessity of revaccination; and statistics show that not only is death very rare amongst those who have been properly revaccinated, but very few contract the disease.

Examining again our statistics, we find that out of three thousand six hundred and sixty-six cases only one hundred and nineteen had been revaccinated before, or only thirty-two per thousand. One reason for this is, that nearly all applying for public vaccination belong to the laboring class, and, naturally, those of adult age are unwilling to run the risk of losing several days' work, to which they are liable, if the vaccination is successful. Consequently it has been found difficult, for this reason, to induce laboring people, of both sexes, to submit to vaccination, even after being exposed to

small-pox. And every kind of deception is often resorted to in order to escape vaccination. An example of this occurred last winter. A case of small-pox occurred in a boarding-house containing from twenty-five to thirty inmates, mostly men. It was only with the greatest difficulty that the people in the house could be induced to submit to vaccination, and then only after being threatened with legal prosecution. Two, however, contrived to elude it; and yet, of these two, one had slept in the same bed with the patient with small-pox. This man finally fell ill with the disease at the end of the usual period.

Believing in the desirability of having every person in the community revaccinated once in a lifetime, we submit whether it would not be for the public good to have every child of fifteen years of age revaccinated on graduation from school. Although there are, of course, many practical objections to this, we believe they could be overcome. In this way the rush for vaccination, whenever we are threatened with an epidemic, would be avoided, with all the ill consequences liable to follow hasty and careless vaccination.

DIPHTHERIA.

As heretofore, the Board has continued the sanitary inspecting of all houses in which a case of this disease has been reported. In all cases where any defect has been found, notice has at once been sent to the owner or occupant, and subsequent examination made from time to time, until the existing defects have been remedied.

The following table shows the results obtained from these examinations :—

WARDS.	Mistake in report made by physician.	Diphtheria on arrival	Direct contagion.	Examination refused.	House closed.	Premises in good sanitary condition.	Full and offensive vault.	Full and offensive cesspool.	Filthy and wet cellar.	Defective drainage.	Public Institutions.	Filthy premises and overcrowded.	No examination.	Total.	Fatal cases.
I. ....	..	..	..	..	..	8	1	..	..	121	..	..	..	130	52
II.	3	..	1	..	..	10	3	..	..	141	..	..	..	158	69
III. ....	..	2	..	..	..	8	2	..	..	34	..	..	..	46	19
IV.	2	..	..	..	..	21	..	..	..	81	..	..	..	104	32
V. ....	..	..	..	..	..	3	3	..	..	24	..	..	..	30	10
VI.	1	..	..	..	..	5	1	..	..	31	..	..	..	38	11
VII.	1	..	..	..	..	12	2	..	..	29	..	..	..	44	15
VIII. ....	..	..	..	..	..	13	..	..	..	36	..	..	..	49	19
IX. ....	..	..	..	..	..	10	..	..	3	24	1	..	..	38	14
X. ....	..	..	..	..	..	3	..	..	..	15	..	..	1	19	7
XI.	1	1	..	1	..	12	..	..	..	23	..	..	..	38	14
XII. ....	..	..	..	..	..	8	1	..	..	28	..	..	..	37	13
XIII.	2	..	..	..	..	6	..	..	..	97	..	5	..	110	46
XIV.	4	1	..	..	1	12	1	..	1	90	1	..	..	111	39
XV. ....	..	..	..	..	..	7	1	..	..	33	..	..	..	46	20
XVI. ....	..	..	..	..	..	8	..	..	..	25	..	..	..	33	12
XVII. ....	..	1	..	..	..	8	..	1	..	23	..	..	..	33	6
XVIII. ....	..	..	..	1	..	6	2	1	..	16	27	..	..	53	44
XIX. ....	..	..	..	..	1	20	1	2	2	74	..	..	..	100	33
XX. ....	..	..	..	..	..	14	1	..	2	70	..	..	..	87	23
XXI. ....	..	..	..	..	..	5	2	..	..	27	6	..	..	40	17
XXII. ....	..	1	..	..	..	7	3	..	..	54	..	..	..	65	22
XXIII. ....	..	..	2	..	..	12	2	2	2	70	..	..	..	90	20
XXIV.	2	..	..	..	..	17	6	1	..	142	..	..	..	167	33
XXV. ....	..	..	1	..	..	7	..	..	..	29	..	..	..	37	11
Total	16	6	4	2	2	236	39	7	10	1,342	35	5	1	1,704	601

In the third column are placed those cases in which the disease could be directly traced to contagion, and in which there was no question of the sanitary condition of the patient's surroundings. The last column but two contains a few cases which occurred in public institutions, and an examination of which was left to the proper medical officers in

charge of the buildings in which the cases occurred. No report of these examinations is kept in this office.

The following table shows the results of the examinations grouped together, with a view of presenting more clearly the relative proportion of healthy and unhealthy dwellings in which diphtheria had occurred : —

Diphtheria on arrival	6	
Direct contagion	4	
Premises in good sanitary condition	235	
Mistakes in physicians' report	16	
Examination refused	2	
Houses closed	2	
Public institutions	35	
No examination made	1	
	—	56
Unhealthy and overcrowded tenements	5	
Bad sanitary location	1	
Filthy yard	1	
Filthy cellars	10	
Filthy cesspools	7	
Full and offensive vaults	39	
Defective drainage	1,342	
Premises in bad sanitary condition	1,405	
Total number of cases reported	1,706	

Of these one thousand seven hundred and six cases of diphtheria, six hundred and one were fatal, giving a mortality of about thirty-five per cent. Of the houses in which these cases occurred, eighty-two per cent. were found to be in a defective sanitary condition. It is not, of course, to be understood that all the houses in which no defects were found were in a perfect sanitary condition, as some defect might have escaped notice.

The custom of examining all places in which diphtheria has occurred has been continued for four years, with the following results : —

	1878-79	1879-80	1880-81	1881-82	Total.
Diphtheria on arrival	9	17	8	6	40
Direct contagion	7	6	4	4	21
Premises in good sanitary condition	358	291	327	235	1,211
Premises in bad sanitary condition	867	825	1,340	1,405	4,437
Sanitary condition unknown	93	28	36	56	213
Total number of cases reported	1,334	1,167	1,715	1,706	5,922
Percentage of premises in a defective sanitary condition	72	73	78	82	
Percentage of mortality	33	33	34	35	

In three hundred and sixteen cases the premises in which diphtheria had occurred were thoroughly fumigated by inspectors in the service of the Board.

SEWERAGE.

The sewage of the whole city still continues to be discharged at the eighty-two sewer outlets, settling on the shoals, and polluting the air of not only the entire margin of the city, but to a great distance interior. The Board of Health began eight years ago asking for the relief from this great nuisance, which could be found only in the use of an intercepting sewer.

This sewer was begun in October, 1877, and has been completed as far as the pumping-station, a point in Dorchester Bay, at a cost of nearly \$3,000,000. It will require at least two years more to complete the tunnel under the bay and finish the reservoir at Moon Island, when the entire system can be put in use. Meanwhile immediate and increasing relief could be obtained by pumping a portion of the sewage at once into Dorchester Bay.

Those portions of the city which would be most relieved by the change are the West End, Back Bay, South End, Roxbury, and South Boston.

It was ascertained that connections could be made in a

few weeks by which four and three-quarter million gallons of sewage daily from South Bay, and two and three-quarter million gallons daily from Charles river, could be taken into the new sewer and pumped into Dorchester Bay. This amount could, in a few months, be increased to 10,000,000 gallons, one-half of which now goes into Charles river and the other half into South Bay.

In considering this question of pumping into Dorchester Bay, the City Council sent the following order to the Board of Health:—

CITY OF BOSTON.

IN BOARD OF ALDERMEN,
March 20, 1882.

Ordered, That the Board of Health be requested to consider and report whether the proposed discharge of sewage into Dorchester Bay will be prejudicial to the health or comfort of the inhabitants of South Boston.

Sent down for concurrence.

March 23. Came up concurred.

Approved by the Mayor March 25, 1882.

A true copy.

Attest:

(Signed)

JOHN T. PRIEST,
Assistant City Clerk.

The following answer was made April 17th:—

OFFICE OF THE BOARD OF HEALTH, 32 PEMBERTON SQUARE,
BOSTON, April 17, 1882.

To the Honorable City Council:—

GENTLEMEN,—In compliance with an order of the City Council, approved by the Mayor on the 25th ultimo, requesting the Board of Health “to consider and report, whether the proposed discharge of sewage into Dorchester Bay will be prejudicial to the health or comfort of the inhabitants of South Boston,” we respectfully report:

That Old Harbor Point, the place where it is proposed to discharge the sewer for the next two or three years, is a point of land extending into Dorchester Bay, between Squantum Head and South Boston Point. It is situated south, and one and one third miles distant, from the nearest inhabitant of South Boston, with a channel of water nine to fourteen feet deep, ebbing and flowing midway between the two points. There is no current of water passing from Old Harbor Point to South Boston Point, or to South Boston Flats, and the prevailing winds of summer, being westerly, would not force the atmosphere of this point in the di-

rection of South Boston. The amount of sewage which is to be discharged at this point, the present season, is estimated at 5,000,000 gallons daily for dry weather, which will be somewhat diluted in rainy weather.

The relative merits of two places on the Point, for the outfall of the sewer, have been considered; one is close by the pumping-works, where arrangements have been nearly completed for the discharge, and the other is at the end of the pier, 1,200 feet distant, in a line with the projected sewer, and at the point where the main sewer, when completed, will dip beneath Dorchester Bay.

The sewage can be pumped into the bay continuously or intermittently at either place. The sewer is capable of holding the accumulation of the six hours of flood tide, or even of twenty-four hours, without harm. Any sediment found in the sewer, in consequence of this storing, can easily be removed by the ready means which have been provided for flushing.

If the discharge is made at the first-named place it will probably make little difference whether the pumps are worked continuously or intermittently, inasmuch as this place has only the common rise and fall of the tide, without the advantage of a current.

There will, in this case, be some deposit of sewage sludge about the outfall of the sewer, and for a short distance from it, and, in time, it will undoubtedly be the cause of a local nuisance.

But that this sewage will make its way across the channel, and find lodgment on South Boston flats, or that the result of collection at the sewer outfall in two or three years will be sufficient to reach and harm or discomfort the inhabitants of South Boston, is improbable. If, on the other hand, discharge is made into the channel at the end of the pier, for two or three years, and only on the ebbing of the tide, there is no reason to expect any effect, local or diffused, which will be prejudicial to the health or comfort of the inhabitants of any section of the city or adjoining territory.

On the contrary, we have every reason to say that the immediate use of this intercepting sewer is not only necessary to relieve the wretched unsanitary condition of other parts of the city, but that its use will materially improve the sanitary condition of South Boston itself.

It is highly desirable that the citizens of Boston should this season have a measure of the long-sought-for relief, which the use of this sewer must ultimately give.

In making this investigation we have called to our aid the service of eight well-known and reliable sanitary experts and civil engineers.

The conclusions arrived at and here given have been unanimously agreed upon by the board and corps of experts.

Respectfully submitted,

S. H. DURGIN,

Chairman.

The citizens of South Boston and Dorchester took alarm, fearing that a nuisance would be created in Dorchester Bay, and petitioned the Legislature for an act to restrain the city of Boston from carrying out this proposed measure of relief. A special committee of the Legislature was appointed, hearings were given, a report of the committee presented, with a bill to restrain the city, and the bill passed.

The Board of Health was supported fully in its statements by Joseph P. Davis, C.E., recently city engineer of Boston; Henry M. Wightman, C.E., present engineer of Boston; Eliot C. Clark, C.E., in charge of construction of new sewer; William H. Bradley, C.E., Superintendent of Boston Sewer Department; Edward S. Philbrick, C.E., and sanitary expert; Ernest W. Bowditch, C.E., and sanitary expert; Dr. Henry P. Walcott, Chairman Cambridge Board of Health and Health Officer of the State Board of Health of Massachusetts, and Dr. Charles F. Folsom, recently member of our State Board of Health and now of the National Board of Health; a corps of sanitary experts and engineers not excelled in New England, and, so far as concerns their ability to speak from a familiarity with this special subject and matters connected immediately with it, they have no superiors anywhere.

The Board of Health regrets that this restraining act has been passed, and believes the city, especially South Boston, will unnecessarily suffer during the next two years in consequence.

HOUSE-DRAINAGE.

The examination and repair of imperfectly constructed or defective house-drainage continues to require a large part of the attention of the department.

No part of the work requires more care and skill, and none is attended with better results. The principal part of this work is in detecting breaks or loose joints in the cellar through which the gases from the drain or sewer may be let into the house. In many instances the joints are imperfectly made or neglected at the beginning. They are often made

with cement or putty, which may soon crack or crumble by any jarring or disturbance of the pipes. Sometimes no attempt is made to form a tight joint, and the gases from the drain or sewer have free access to the house. In other instances the drains and pipes are well arranged and the joints well made, but no trap is used. In other cases there is only one trap, and that in the drain where it leaves the house to join the sewer in the street, and here the whole house-drain and waste-pipes, with their foul interiors, continually contaminate the air of the house. Another mistake is frequently made by not providing any ventilation for the drain or soil pipe, and in that event, although the pipes and traps are otherwise good, the traps may be siphoned out and leave the communication between the drain and rooms perfectly free. It is well in all instances to use good iron pipes for the soil-pipe and drain to some distance outside the house. The joints should always be made with lead driven firmly. The drain should, if possible, be above the cellar-bottom through-out, and be trapped just inside the cellar-wall. The soil-pipe should always be extended full size through the roof to a point several feet above the highest part. There should be a trap immediately under every bowl, bath-tub, water-closet, slop-hopper, wash-tray, or other fixture. Preference may safely be given to the S trap, which is the simplest and cheapest, and is self-cleansing. Every trap should have independent ventilation, to protect it from siphonage. A single exception may be made, and that under the wash-trays in the laundry, where the round trap may be used without independent ventilation. A fresh current of air through the drain and soil-pipe is a benefit, and may be secured by an inlet pipe entering the drain just inside the drain-trap and opening outside in a convenient place, distant from any window.

Eleven blocks of houses have been examined this season from door to door, without reference to complaints or known faults, with the following results : —

SECTION 1.

Twenty-nine good brick houses situated in Ward 11, grade 18 to 19, in fair condition; occupied principally by mechanics.

Number of houses in the block	29
“ examined	29
“ in which bad odors were found	22
“ in which defective drains were found	18
“ in which defective trapping was found	16
“ having privy vault on premises	2
“ of such vaults found offensive	0
“ having damp or unclean yards	1
“ having damp or unclean cellars	0
“ using furnaces	12
“ furnaces without proper air-supply	2
“ having water-closets	27
“ offensive water-closets	5
“ having ventilation to soil-pipe or drain	2

SECTION 2.

Twenty-six good brick houses situated in Ward 16, grade 15 to 17, in fair condition, used mainly as lodging and boarding houses, and occupied by 397 persons.

Number of houses in the block	26
“ examined	25
“ in which bad odors were found	10
“ in which defective drains were found	10
“ in which defective trapping was found	1
“ having privy vault on premises	5
“ of such vaults found offensive	0
“ having damp or unclean yards	3
“ having damp or unclean cellars	0
“ using furnaces	23
“ furnaces without proper air-supply	5
“ having water-closets	20
“ offensive water-closets	2
“ having ventilation to soil-pipe or drain	0

SECTION 3.

Thirty-five brick and wooden houses situated in Ward 3, grade 54 to 64, in fair condition, occupied principally by mechanics, — 176 persons.

Number of houses in the block	35
“ examined	35
“ in which bad odors were found	20
“ in which defective drains were found	18
“ in which defective trapping was found	14
“ having privy vault on premises	12
“ of such vaults found offensive	2
“ having damp or unclean yards	0
“ having damp or unclean cellars	1
“ using furnaces	12
“ furnaces without proper air-supply	2
“ having water-closets	24
“ having ventilation to soil-pipe or drain	4

SECTION 4.

One hundred and three brick houses situated in Ward 19, grade 15 to 19, in fair condition, occupied principally by mechanics, — 653 persons.

Number of houses in the block	103
“ examined	103
“ in which bad odors were found	78
“ in which defective drains were found	58
“ in which defective trapping was found	44
“ having privy vault on premises	2
“ of such vaults found offensive	2
“ having damp or unclean yards	0
“ having damp or unclean cellars	1
“ using furnaces	15
“ furnaces without proper air-supply	10
“ having water-closets	101
“ offensive water-closets	24
“ having ventilation to soil-pipe or drain	4

SECTION 5.

Seventy-one houses, mostly wooden, situated in Ward 3, grade 17 to 19, in poor condition, occupied principally by laboring classes,— 685 persons.

Number of houses in the block	71
“ examined	69
“ in which bad odors were found	59
“ in which defective drains were found	56
“ in which defective trapping was found	48
“ having privy vault on premises	14
“ of such vaults found offensive	10
“ having damp or unclean yards	0
“ having damp or unclean cellars	5
“ using furnaces	1
“ furnaces without proper air-supply	0
“ having water-closets	55
“ offensive water-closets	6
“ having ventilation to soil-pipe or drain	0

SECTION 6.

Forty-two brick and wooden houses situated in Ward 2, grade 15 to 19, in fair condition, occupied by various classes,— 296 persons.

Number of houses in the block	42
“ examined	41
“ in which bad odors were found	27
“ in which defective drains were found	23
“ in which defective trapping was found	25
“ having privy vault on premises	14
“ of such vaults found offensive	10
“ having damp or unclean yards	0
“ having damp or unclean cellars	3
“ using furnaces	5
“ furnaces without proper air-supply	4
“ having water-closets	27
“ offensive water-closets	3
“ having ventilation to soil-pipe or drain	0

SECTION 7.

Fifty-seven wooden houses situated in Ward 1, grade 56 to 79, in fair condition, occupied principally by mechanics, — 331 persons.

Number of houses in the block	57
“ examined	57
“ in which bad odors were found	42
“ in which defective drains were found	35
“ in which defective trapping was found	16
“ having privy vault on premises	6
“ of such vaults found offensive	5
“ having damp or unclean yards	0
“ having damp or unclean cellars	0
“ using furnaces	13
“ furnaces without proper air-supply	5
“ having water-closets	51
“ offensive water-closets	10
“ having ventilation to soil-pipe or drain	0

SECTION 8.

Thirty new brick houses situated in Ward 11, grade 18 to 20, in excellent condition, occupied by merchants and capitalists, — 178 persons.

Number of houses in the block	30
“ examined	28
“ in which bad odors were found	1
“ in which defective drains were found	0
“ in which defective trapping was found	0
“ having privy vault on premises	0
“ of such vaults found offensive	0
“ having damp or unclean yards	0
“ having damp or unclean cellars	0
“ using furnaces	28
“ furnaces without proper air-supply	7
“ having water-closets	28
“ offensive water-closets	0
“ having ventilation to soil-pipe or drain	28

SECTION 9.

Twenty-eight wooden and brick houses situated in Ward 14, grade 39 to 70, in good condition, occupied by business men and mechanics, — 143 persons.

Number of houses in the block	28
“ examined	24
“ in which bad odors were found	11
“ in which defective drains were found	11
“ in which defective trapping was found	2
“ having privy vault on premises	1
“ of such vaults found offensive	1
“ having damp or unclean yards	0
“ having damp or unclean cellars	0
“ using furnaces	22
“ furnaces without proper air-supply	8
“ having water-closets	23
“ offensive water-closets	0
“ having ventilation to soil-pipe or drain	3

SECTION 10.

Forty-five wooden houses situated in Ward 13, grade 18 to 25, in fair condition, occupied principally by mechanics, — 455 persons.

Number of houses in the block	45
“ examined	45
“ in which bad odors were found	34
“ in which defective drains were found	29
“ in which defective trapping was found	23
“ having privy vault on premises	33
“ of such vaults found offensive	25
“ having damp or unclean yards	6
“ having damp or unclean cellars	10
“ using furnaces	0
“ furnaces without proper air-supply	0
“ having water-closets	12
“ offensive water-closets	0
“ having ventilation to soil-pipe or drain	1

SECTION 11.

Thirty four wooden and brick houses situated in Ward 9, grade 14 to 17, in poor condition, occupied principally by laboring classes, — 417 persons.

Number of houses in the block	35
“ examined	35
“ in which bad odors were found	30
“ in which defective drains were found	21
“ in which defective trapping was found	22
“ having privy vault on premises	29
“ of such vaults found offensive	17
“ having damp or unclean yards	0
“ having damp or unclean cellars	15
“ using furnaces	1
“ furnaces without proper air-supply	1
“ having water-closets	5
“ offensive water-closets	0
“ having ventilation to soil-pipe or drain	1
Total number of houses examined	491
“ in which bad odors were found	332
“ in which defective drains were found	279
“ in which defective trapping was found	210
“ having privy vault on premises	118
“ of such vaults found offensive	72
“ having damp or unclean yards	10
“ having damp or unclean cellars	35
“ furnaces used	132
“ furnaces without proper air-supply	44
“ having water-closets	373
“ having water-closets offensive	50
“ having ventilation to soil-pipe or drain	40

The following is a list of nuisances abated during the year on complaint made at this office : —

Drains repaired	2,625
Vaults and privies cleaned and repaired	2,261

Traps put in drains	1,401
Cellars cleaned	473
Yards cleaned	379
Cesspools cleaned	209
Passage-ways cleaned	54
Vacant lots cleaned	87
Stagnant water removed from vacant lots	228
Receptacles provided for manure	41
Places from which fowls have been removed	87
Places from which swine have been removed	15
Receptacles for garbage supplied	19
Places cleaned generally	52
Sundry nuisances abated	164
Total	8,086

In addition to the above the following shows the number of places cleaned and disinfected : —

Streets	301	Water-closets	461
Places	225	Passage-ways	1,350
Courts	231	Urinals	262
Alleys	1,048	Vacant lots	167
Yards	3,593	Old sheds	1,354
Vaults	5,480	Vacant rooms	50
Cellars	945		
Cesspools	5,375	Total	22,038
Gutters	1,196		

In this latter work there were used three hundred and eighteen barrels of copperas, thirty-six barrels of Lerner's disinfectant powder, eighteen barrels of carbolate of lime, eight casks of chloride of lime, one barrel of phenyle disinfectant.

HOUSES VACATED.

The number of houses ordered to be vacated for sanitary reasons during the year was one hundred and fifty-two. Of this number the tenants were actually excluded from

but twenty-five houses, the remaining houses having been put in proper sanitary condition by the owners or agents after orders to vacate had been issued and before the time allowed for the tenants to vacate had expired. The number of families notified of the Board's intention to vacate houses occupied by them was three hundred and eighty.

SCHOOL-HOUSES.

The various school-buildings throughout the city have been carefully inspected during the past year, and it is gratifying to be able to report a marked improvement in their general sanitary condition as compared with that of previous years. One hundred and sixty-three school-buildings were inspected and forty-five defects in drainage were indicated, being about twenty-eight per cent. ; but it must not be taken for granted that in all these cases sewer-gas escaped into the buildings. The dangerous nature of a defect depends in a great measure upon its location with reference to the trapping, and as to whether the defect is at the top or at the bottom of the drain. A large proportion of the defects were where the sink waste-pipes terminate in the cellar, and, comparatively speaking, very little but clean water goes into the sinks. Only in two instances, where defects in the drains were indicated, could the presence of sewer-gas be detected. In every case where water-closets were in use they were found to be clean, and appeared to be properly cared for, with the exception of those in the new High School building on Montgomery street. Where vaults were used they were found, for the most part, in fair sanitary condition. The following table shows the result of the last inspection of school-houses : —

Number of school-houses inspected	.	.	.	.	.	.	163
In good sanitary condition	.	.	.	.	.	.	97
Defect in drainage	.	.	.	.	.	.	45
Offensive vaults	.	.	.	.	.	.	5
Offensive urinals	.	.	.	.	.	.	5
Filthy privies	.	.	.	.	.	.	5
Offensive water-closets	.	.	.	.	.	.	1

Offensive cesspools	0
Defective cellar floors	1
Damp cellars	19
Cellars not left properly clean	7

In the above classification of defects no mention is made of the lack of proper ventilation of school-rooms, inasmuch as in a large number of cases the trouble does not arise so much from defective appliances for ventilation as from other causes. In nearly all the buildings odors were more or less perceptible, but in only fourteen were the odors found to be bad. In some instances the apparatus was ample for securing proper ventilation, but, either through the ignorance or the carelessness of those having charge of the building, the apparatus was not properly adjusted. In numerous cases, again, it was found that the bad odors came from the clothing of the pupils, which is not always in so clean a condition as it should be. In the case of the Wall-street Primary School-house, which this Board has repeatedly recommended to be abandoned, the trouble appeared to be that the location of the building is entirely unsuited for school purposes, being situated on a narrow street, with no yard, closely hemmed in by crowded tenement-houses, and almost entirely cut off from proper light and air. The Dearborn-street primary-school building was found to be in good condition so far as its drainage was concerned; but the teachers complain of unwholesome odors, which doubtless arise from the fact that the cellar of the building is too low and damp. The building should be elevated, and the floor of the cellar correspondingly raised. The Board has called the attention of the proper authorities to these facts, and it is hoped that remedies for all defects will be promptly applied. It is almost too much to hope that all improper localities will be abandoned forthwith, or that a perfect system of ventilation in all the school buildings will be at once secured. The era of the millennium in school hygiene is still far off, but its coming may be hastened by a prompt application of remedies to defects as fast as they develop themselves.

CHARLES AND MYSTIC RIVER VALLEYS.

The exceeding foul condition of the shores of the Charles and Mystic rivers, on account of the many outlets of sewers on bare surfaces or into very shallow water, caused us to call the attention of the City Council to the fact three years ago.

We then suggested that some action be taken by which the several cities and towns interested might be united in carrying out a scheme for intercepting all the sewage now entering the Charles and Mystic rivers, and conveying it to a safe distance from habitation. Last year the Governor appointed a commission of five gentlemen to consider and report a plan of intercepting sewers for the two valleys.

The report was made to the last Legislature, referred to the Committee on Public Health, and several hearings were given. The subject was discussed, when it appeared evident that something more definite in plan and specification was desired by those living in the several places which were to be benefited by the scheme. It also appeared in evidence that the great majority of those interested were in favor of pursuing the investigation and obtaining such a plan as could be agreed upon for building a system of sewers.

The committee lukewarmly reported a bill in favor of the investigation, which came to an easy death.

We are disappointed at this action of the Legislature, and will simply state that the great need which exists to-day will be seriously felt long before it is now possible to complete such a piece of work as building the required sewers.

PRISON-POINT NUISANCE.

The first act passed for the abatement of this nuisance expired, by its own limitation, April 26, 1881, at which time less than one-half the area covered by it had been filled. May 6, 1881, a new act was passed, substantially like the first, except that it devolved upon the Board of Health the duty of issuing to the several owners of the flats embraced within the act notices to fill the same. As soon as a copy of this act could be procured the Board caused an accurate plan

of the territory to be prepared by the City Surveyor, showing the several tracts to be filled and the names of the supposed owners thereof. Notices and orders to fill these tracts were prepared and served upon the supposed owners, the orders defining the manner of such filling and the time within which the same was to be performed.

The great body of these flats belonged to four railroad corporations, — the Eastern, the Boston & Maine, the Lowell, and the Fitchburg. The Boston & Maine proceeded with alacrity to fill substantially all of its flats embraced within said territory. The Boston & Lowell also, in the course of the summer and fall, filled its flats. The Eastern had a much larger territory to fill than either of the last two named corporations, and it has been embarrassed by adverse claims to a portion of the flats, which are still in litigation, awaiting the decision of the Supreme Judicial Court. But this corporation has filled several offensive tracts lying north of the Lowell Freight Railroad track, and has also filled a large area along Rutherford avenue, in the old mill-pond. It has also filled a considerable area above the old State prison, and has extended the sluice-way so as to furnish an outlet and inlet to the tide-water to cover the unfilled portions of the flats. The portions of the flats in this locality — most offensive at the time of the passage of the act — have thus been filled, and the means provided for keeping the remainder covered with salt water, while the filling proceeds, so it is hoped that no offence will arise therefrom.

The portion of territory embraced in said act, at present most offensive, is that portion lying in the channel of the old creek north-westerly of the Boston & Lowell freight track. It is not definitely known whether the true title to this territory belongs to the several riparian owners abutting thereon, or to the Eastern Railroad Company, both claiming title to it, but neither being willing, thus far, to incur the expense of filling flats that may be adjudged the property of an adverse claimant. All of the riparian owners and the Eastern Railroad Company have been notified to fill these flats, and the Board has thus exhausted its authority in the

premises. These flats were very offensive during the warm weather last summer, and cannot fail to be so again as soon as the hot weather returns. If the owners shall continue to neglect to fill this old creek it will be the duty of the city to fill it, in order to abate the nuisance therein.

The details of the action of the Board in relation to these flats were communicated to the City Council on the 17th of November last for its information and action, and may be found in City Document numbered 141 of the year 1881.

The Fitchburg Railroad Company is the owner of a very large tract of flats in Somerville, and extending within the area embraced by said act. These flats the company have been filling very rapidly, and if the work is continued through the coming year at the same rate the filling will be nearly or quite completed by its close.

The great and constantly increasing demands for freight and track accommodations are such that these grounds are covered with railroad tracks and freight-houses as soon as they are filled to a proper grade for such use. The complete filling of all the flats embraced within said act will, therefore, not only abate what was formerly a great nuisance, but will add very materially to the prosperity of the city, by furnishing three or four hundred acres of land for immediate business purposes.

CLAPP-STREET TERRITORY.

On August 11th, a petition was received, from residents in the neighborhood of Clapp street and Franklin court in Ward 20, for the abatement of a nuisance in the territory bounded by Norfolk avenue, Clapp street, Franklin court, and East Chester park. The territory was examined by the Board of Health, and a hearing given August 22d, in accordance with Chapter 160 of the General Statutes.

It was found that the open sewer leading from Norfolk avenue to Willow court, where it discharges into South Bay ; the old channel of a brook containing stagnant water and drainage ; also numerous puddles of stagnant water in different parts of the territory, were the causes of the nuisance

complained of. The Board ordered the owners to abate the nuisance within a certain time; and at the expiration of this time, the owners not having complied with the order, the Board of Health proceeded and abated the nuisance by filling up the channel of the brook and places at the expense of the owners. The drainage of Franklin court, which had been discharging into the old channel of the brook, having been cut off, the Board then built a sewer in Franklin court, to discharge into the sewer in Norfolk avenue. For this purpose the Board asked for and was granted a special appropriation of \$2,000, of which the Board spent \$1,500, and assessed this amount upon the several corporations and owners benefited. This section was very greatly improved by the filling and draining referred to, but so long as the city maintains the present open sewer across the territory much of the long-existing nuisance will remain.

WATER SUPPLY.

In our report a year ago we called attention to the bad appearance and taste of our drinking-water, which at that time had been causing considerable inconvenience and fear among the consumers. We also published the analysis of it made by Dr. Wood, who did not find it to be in a dangerous condition, but containing evidences of unprepared or unsuitable water-basins.

There has been much complaint during the year past, and not without cause, for the water has been bad in taste, smell, and appearance.

In November the Board of Health, accompanied by members of the Water Board, made a visit to Farm Pond, Sudbury river and its storing basins, Lake Cochituate, Chestnut Hill and Brookline Reservoirs. The Board found the peculiar taste, smell, and appearance, which was complained of in the city, in Farm Pond and in Chestnut Hill Reservoir, the latter containing only water from Farm Pond. The pond was receiving water from the upper basin on Sudbury river,

but the peculiar condition was not found anywhere beyond the pond.

The water of Sudbury river above the upper basin was unobjectionable, with the exception of a very slight discoloration, which is not uncommon at that season of the year, and is due probably to the extra amount of leaves and other vegetable matter incident to the season.

The water in Basin No. 2, which was being used through Farm Pond, had a fair appearance and taste, and does not call for any special remark.

In basins numbered 1 and 3, which were unused at that time, the waters were in every sense foul, but without any of the peculiarities complained of in the waters of Farm Pond. No preparation had been made of any basin such as seems to us to have been necessary before using them for storing purposes.

Lake Cochituate presented at the southerly end the usual white sand shores, and the water its cool, clear, and crisp character, in wide contrast with those previously seen. At the northerly end of this beautiful lake and valuable water supply, however, we found the sewage of the city of Newton flowing directly into a little segment of the lake, separated from it only by a dike of gravel, through which this foul water was freely filtering.

At one place, where a little gate-house had been erected, the water passed in moderate quantity without filtering at all. The water immediately below the dike was but little better in any respect than that above, which consisted of the diluted sewage of a city of twenty thousand inhabitants. This palpable wrong should be stopped with the least possible delay. The water in Chestnut Hill Reservoir was in all respects the same as that of Farm Pond. The water in the Brookline Reservoir came from Lake Cochituate, and was therefore in taste and appearance of the best quality. We have no recommendations to make beyond those which we made last year, and which related to the preparation of the storage-basins, and the keeping of the waters free from pollution.

NIGHT-SOIL.

A new contract for the removal of night-soil was made last year, and at reduced rates, for a term of three years; the price now being six dollars per load of eighty-cubic feet throughout the year. The work is done by the odorless excavating apparatus wherever it is practicable to do so, and complaints about offensive odors, or any other annoyance connected with the removal, are now rarely made.

The most serious question now connected with this work, and which may yet give more trouble, is as to the disposition of the material after its removal from the vaults. Some of it is carried down the harbor by means of scows; some is carried out upon farms in the suburbs; both of which are expensive methods of disposal. Much of it has heretofore been taken to the dumps on Boston wharf, where it has been mixed and covered with other materials, with more or less success in preventing a nuisance to those engaged in the vicinity. But the recent and extensive developments of property in that section, where business is now as active as in almost any part of the city, made it necessary to prohibit any further deposit of this material in that place several months ago. The following is a copy of the contract made with Messrs. Varney & Young:—

AGREEMENT made this Twentieth day of November, 1880, between the City of Boston of the first part, and Wm. H. Young and Elias C. Varney, both of said Boston:—

Witnesseth, That the City of Boston, in consideration of the agreements on the part of said Young and Varney, hereafter recited, agree that the said Young and Varney shall have and exercise the exclusive privilege and right during the term of three years, from January 1st, 1881, of taking and removing the contents of all vaults, privies, and cesspools, used as receptacles for night-soil in the several wards of said City of Boston, under the restrictions and limitations hereinafter set forth.

And said City agrees to furnish at its own expense a person to receive and report without delay to said Young and Varney, all applications for cleaning vaults, privies, or cesspools used as receptacles of night-soil in said wards, such person to attend for that purpose at such place and such hours as the Board of Health of said City shall direct.

And said City further agrees, that said Young and Varney may demand and receive from applicants for said work, or from the owner or lessee of the premises on which the said work is done under this contract, or from any other person legally liable therefor, the sum of six dollars for each and every load of eighty cubic feet of night-soil or other contents of such vaults, privies, or cesspools, removed in pursuance of applications made therefor during said term, the same to be received by them in full compensation for said work, without any liability therefor on the part of said City except for such work done on premises owned or leased by it.

But for any vault, privy, or cesspool so emptied containing less than eighty cubic feet, the price shall be the same as for eighty cubic feet, provided such vault, privy, or cesspool be thoroughly emptied.

The said Young and Varney, in consideration of the agreements of said City above set forth, contract and agree to promptly and thoroughly empty and remove all the contents of vaults, privies, and cesspools used as receptacles of night-soil in the said wards of said city during the term of three years from January 1st, 1881, application for which shall be made as aforesaid (provided the owner, occupant, or person making the application to have such vault, privy, or cesspool emptied, shall pay the regular price therefor, or make a sufficient deposit of money to pay for such work according to the stipulated price therefor, if they or any of them are requested so to do by the said Young and Varney when they receive such applications), and to remove such contents by some odorless excavating apparatus (which shall be approved by the Board of Health), when and wherever practicable, and to perform said work in a thorough, neat, and prompt manner, to the satisfaction of said Board of Health, *within a reasonable time*, and within forty-eight hours after receiving such application, if *so directed by the Board of Health*, and in accordance with the ordinances of said City relating thereto, which now are or hereafter during said term may be in force; provided, however, that the rates of compensation above specified shall not be affected or altered by any ordinance or vote of the City Council, hereafter passed during said term.

And said Young and Varney agree that for said work they will furnish and employ a sufficient number of workmen and wagons, tanks, or barrels, to be first measured and sealed by some sealer of said City, said wagons or tanks to contain not less than eighty cubic feet each, and said wagons, tanks, and barrels to be approved by the Superintendent of Health of said City.

Said Young and Varney further agree, that no such wagon, tank, or barrel, unless it be air-tight and odorless, shall come within the limits of said City before ten o'clock in the evening, or remain within said limits later than until one hour before sunrise; and that in no case shall the contents, or any part of the contents thereof, be emptied into any dock or stream in said City, or on or near any street or way within the limits of said City; and that every vault, privy, and cesspool emptied

under this contract shall be left covered and clean, and none of the contents thereof dropped or left on the premises about the same, nor in any street or way of said City in process of removing such contents.

And said Young and Varney agree to reimburse said City for all damages and expenses it may suffer or incur by reason of such leavings or droppings.

And said Young and Varney further agree to furnish at their own expense, and apply to all vaults, privies, and cesspools, cleaned by them as aforesaid, deodorizing material of such nature and in such quantity as said Board of Health shall approve.

Said Young and Varney further agree to report promptly and regularly every morning, except Sundays, during said term, to said Board, the number and cubic contents of all vaults, privies, and cesspools cleaned by them under this contract; and where the said Board, on the complaint of a person charged for such work, causes the said work to be measured, in case the work measures less than as reported by said Young and Varney, said Young and Varney shall pay the cost of such measurement.

Said Young and Varney further agree not to sell or assign their said privilege, or any part thereof, nor any right or interest under this agreement, without the consent in writing of the Committee on Health of said City for the time being.

It is understood and agreed, that, in case of failure on the part of said Young and Varney to perform their said agreements above set forth to the satisfaction of said Board of Health, said City may cancel this agreement.

It is further understood and agreed, that a notice in writing, signed by the chairman of said Committee, or of said Board, or by the Superintendent of Health of said City, shall be sufficient for any notice required to be given by said City to said Young and Varney, under this agreement.

CITY OF BOSTON,

By FREDERICK O. PRINCE, [L.S.]

Mayor.

W. H. H. YOUNG. [L.S.]

E. C. VARNEY. [L.S.]

Witness, WM. L. HICKS.

Approved December 30, 1880.

THE BOARD OF HEALTH,

By SAMUEL H. DURGIN,

Chairman.

PUBLIC URINALS.

The public urinals have not been increased during the year, owing entirely to the impossibility of procuring desirable sites on which to erect additional ones. The twenty-two urinals now maintained by the Board continue to supply a great and growing want; and as soon as the need of such accommodations as they afford is sufficiently appreciated in other localities to conquer the prejudices existing against these institutions and allow their erection, the Board is prepared to add to their number. Complaints on account of any of the urinals now in use have become very rare, owing to the scrupulous care maintained over them, and their benefits have become so pronounced as to place them beyond the stage of a mere experiment.

PUBLIC BATHS.

The sixteen free public bathing-houses were well patronized during the last bathing season, though the number of bathers, as compared with the previous year, fell off somewhat, owing, doubtless, to the unusually cool weather which prevailed during a portion of the summer months. The following table shows the number of bathers at each of the bathing-houses:—

For Men and Boys.

	Number of Bathers.
West Boston bridge, foot of Cambridge street .	66,823
Craigie's bridge, foot of Leverett street . .	74,888
Charles-river bridge, near Causeway street .	50,535
East Boston Sectional Dock, Border street .	37,893
Mt. Washington-avenue bridge, near Federal street	42,683
South Boston, foot of L street, Dorchester Bay	92,553
Dover street, at South pier	57,113
East Boston, Maverick street	27,652
Chelsea Bridge, Charlestown	31,560

For Women and Girls.

Warren bridge, near Causeway street . . .	42,278
East Boston Sectional Dock, Border street . . .	26,835
South Boston, foot of Fifth street . . .	48,262
Dover street, at South pier . . .	23,269
Commercial Point, Dorchester . . .	8,982
Chelsea bridge, Charlestown . . .	16,551

For Males and Females.

Malden bridge, Charlestown :—

Males, 42,725 ; Females, 4,850 . . .	47,575
Total	695,452

It is a notable fact, and creditable to the watchful care exercised by those having immediate charge of the several bathing-houses, that no accidents, either from drowning or other cause, occurred during the year.

During the bathing season, lasting from June 1st to October 1st, twelve men, including a general superintendent, and seven women, were employed as keepers. During the winter months seven men were employed to make all necessary repairs upon the old houses ; and two new floating bath-houses were built to take the place of old ones, unfit for further use. Numerous requests have been received for the establishment of bath-houses in sections of the city which are now without them, and for additional accommodations where bath-houses are now maintained. None of these requests have been complied with, for a variety of reasons. The annual appropriation for bath-houses (\$12,500) is no more than sufficient, with the strictest economy, to maintain the number of houses now established ; and the need of additional bathing accommodations in such locations as could be obtained was not deemed by the Board of sufficient urgency to warrant a request for an increased appropriation.

Bath-house Regulations.

[These apply to the management of all the houses, except as to the hours for bathing at the Malden bridge bath-house. The hours for bathing at this house are so arranged that men and boys are admitted from 5 to 8 A.M., 12 to 3 P.M., and 6.30 to 9 P.M.; women and girls from 8.30 to 11 A.M., and 3.30 to 6 P.M. Sundays, — for men and boys only, — from 5 A.M. to 12 o'clock M.]

The baths will be open daily, except during unfavorable tides, from June 1st to October 1st, as follows: —

MEN.

Week days, 5 A.M. to 9 P.M.
Sundays, 5 A.M. to 12 M.

WOMEN.

Week days, 6 A.M. to 8 P.M.
Sundays, 6 A.M. to 9½ A.M.

Each superintendent in charge will see that adults remain in the water not longer than thirty minutes, and children under twelve years of age not longer than fifteen minutes.

Bathers will be expected to provide their own towels and soap. Female bathers will be required to furnish suitable bathing-dresses. Those desiring towels can obtain them of the Superintendent in charge, at moderate expense.

Boys and girls under fifteen years of age will not be admitted to the bath-houses after 7 o'clock P.M.; and the decision of the Superintendent in charge against admission will be final.

Each Superintendent in charge will have full charge of his premises, and authority to withhold the facilities from all not conforming to these rules; and he will be required to render every reasonable assistance to bathers.

No smoking, profanity, or noisy conversation will be allowed on the premises; and any person guilty of defacing the dressing-rooms, fences, or tanks, by writing, marking, cutting, or other misconduct, will be excluded from the baths, or arrested, according to the nature of the offence.

All questions of priority in bathing, or the use of dressing-rooms, must be referred to the Superintendent in charge, whose decision will be final.

A police officer will be in constant attendance, for the purpose of preserving order and enforcing these regulations, in concurrence with the Superintendent in charge.

By order of the BOARD OF HEALTH,

SAMUEL H. DURGIN,

Chairman.

32 PEMBERTON SQUARE, BOSTON, 1882.

BURIAL-GROUNDS.

With a single exception, these grounds remain under the superintendence of the same employees as in former years.

Early in May, 1881, Mr. Bernard Donigan, who had had the care of Evergreen Cemetery for the last nine years, died, at the age of sixty-five years. The city thus lost an honest, faithful, and efficient servant, — one who labored as assiduously for the public good as men are commonly accustomed to labor for their own. He was succeeded in his office by Mr. Daniel Waugh, a long resident of the Brighton District, who has thus far discharged its duties acceptably.

The City Surveyor, at the request of the Board, has during the past year prepared an accurate map of the historic Old North Burial-Ground in Dorchester, in which the lots are numbered from 1 to 390, inclusive, and are divided into blocks, designated by the letters of the alphabet. The surveyor has, with the aid of Mr. George W. Fowler, so long the efficient superintendent of said grounds, placed upon the margin of this map the names of the owners of the several lots so far as known. As no previous map of these grounds exists, or is known to have been made, this will be of great value, both for present use and future reference.

The following table shows the number of interments in the several cemeteries in the city during the year 1881, and also in Mt. Auburn and Woodlawn Cemeteries, where a large number of the dead of the city are buried : —

Calvary	2,185	Evergreen	46
Mount Hope	1,550	Bunker Hill, R.C.	46
Forest Hills	656	Dorchester South	32
Dorchester, R.C.	627	Ohabei Shalom	23
Woodlawn	625	Codman	15
Mt. Auburn	568	Gethsemane	14
Cedar Grove	410	Walk Hill	14
Bennington-st., E.B.	148	Bunker Hill	6
St. Augustine	109	Copp's Hill.	4
Phipps-st.	82	Toll Gate	3
Central Ground	69	St. Mary's	1
Dorchester North	51	King's Chapel	1
Union Ground	50	Granary	0

PROSECUTIONS.

During the past year there have been seventeen prosecutions in the several courts of primary jurisdiction in the different sections of the city for violations of the health laws and regulations, resulting in convictions in twelve cases, and the imposition of fines and costs amounting in the whole to the sum of \$253.

SALT NUISANCE.

The only violators of the regulation against scattering salt upon the public ways of the city, during the past year, have been the employes of two or three of the horse-railroad companies, acting under the direction of the officers of such companies. The period of snow was brief, but during its continuance the complaints of stable-keepers and owners of horses, of the serious injury to their horses caused by the mixture of salt with the snow, were numerous. Many horses were made sick by it, and some of them, after suffering weeks of torture, ultimately found their way to Spectacle Island, where their carcasses were utilized. In some cases the salt scattered upon the car-tracks was the refuse salt which had been used in curing green hides or in curing fresh fish, and the ordinary evils of mixing salt with the snow upon the public streets were thus aggravated by an infusion of decaying animal matter, causing blood poisoning in the diseased feet of the horses coming in contact with it.

It is not easy to obtain the evidence requisite to secure convictions of violations of this regulation, as the offenders generally take the hours of the night in which the streets are least frequented to do their work. The complaint must be made against the party actually scattering the salt, though he acts in the employment of and under the direction of the officers of the corporation upon whose tracks the salt is scattered. The corporation counsel generally appears to defend the employe against the complaints made, raising all conceivable technical objections until a conviction is had, and then urging the poverty of the defendant as a reason for the imposition of the minimum penalty. Notwithstand-

ing the difficulties encountered in these prosecutions, convictions were secured, and fines imposed in five out of the seven cases prosecuted.

LYING-IN HOSPITALS.

At the beginning of the year there was only one licensed lying-in hospital in the city. During the year another has been licensed, and the license of one which expired during the present year has been renewed. There are now three such hospitals in the city, and they are inspected at regular intervals by a medical inspector, and proper sanitary regulations enforced.

INFANT BOARDING.

During the year eight persons have reported to the Board of Health that they were engaged in the business of boarding infants. A medical inspector has at regular intervals visited their residences and seen that the premises were in a good sanitary condition, and that the babies were being properly treated. Forty-eight babies were boarded during the year at these places.

THE ABATTOIR.

Nothing of an unusual character has occurred at the Abattoir during the past year. The sanitary condition of the slaughter-houses and their appurtenances has been kept at a high standard, and the business of slaughtering has been carried on without occasioning the slightest annoyance to the neighborhood. Diligent inspection of meat and of animals intended for slaughter has been maintained, in order that no diseased or tainted meat might be brought into market. On the first of April, Mr. John H. Terry, Inspector at the Abattoir, resigned his position to accept that of Inspector of Provisions in the city, to which he had been appointed by the Mayor. The faithful and efficient manner in which Mr. Terry had discharged his duties at the Abattoir has been repeatedly testified to by the Board, and his resignation is

deeply regretted. Mr. G. W. Boynton was chosen to fill the vacancy caused by Mr. Terry's resignation, and the long experience of Mr. Boynton in the slaughtering business warrants the expectation that the careful and intelligent supervision heretofore maintained at the Abattoir will not be relaxed. The number of cattle slaughtered at the Abattoir the past year was 77,099, as compared with 88,896 the previous year. This falling off is doubtless due entirely to the shipping of dressed beef from the Chicago cattle-yards, where it is placed in refrigerator cars and brought to this market in good condition. The number of sheep slaughtered at the Abattoir during the past year was 323,055; number of calves 10,000. The amount of beef seized, as unfit for food, by Inspector Terry was 13,293; number of veals seized 17. Nine calves were taken and put on cows when their owners found they would be condemned if slaughtered. Only five cases of Texan fever were reported. One case of slaughtering outside the Abattoir contrary to the provisions of the statute was discovered, and the offender was convicted in court and fined fifty dollars and costs.

INSPECTION OF PROVISIONS.

On April 1st, the term of office of Mr. Wm. F. Brooks having expired, the Mayor appointed Mr. John H. Terry to fill the vacancy. The same vigilance and fidelity which characterized his previous administration of the same office and at the Abattoir were early brought to bear in his new place, and a large number of seizures and successful prosecutions were made during the month of April. The principal seizures made were of immature veals, slaughtered outside the limits of the city, and in many instances outside the State. The lax supervision maintained for some time past, for which the Board of Health is not responsible, had apparently made the business of selling immature veal lamentably flourishing. Some of the veals seized proved on inspection to have been slaughtered when the calves were not over four days old, and the would-be purveyors of this unhealthy meat were so per-

verse as to demand from this Board proof that the veal was not fit for human food, even though it was admitted to have been slaughtered when but four days old ! The pointing out of the provision of the statutes which forbids the sale of veals under four weeks old proved a sufficiently convincing argument to show the owners the error of their way. Another provision-dealer, less ignorant of the law but more ingenious in his method of evading it, was found to have placed the caul of a sheep over the kidneys of a carcass of immature veal, in order thus to give it the appearance of having arrived at the requisite age of slaughter. Such instances of wilful attempts to evade the law show the necessity of the utmost vigilance on the part of those intrusted with its enforcement, and it is hoped that the zeal and activity manifested by Inspector Terry in pointing out such violations of the law will result in a speedy suppression of the business.

Following is a summary of the seizures made by Mr. Brooks during the year: beef, 593 lbs. ; veal, 2,224 lbs. ; poultry, 2,542 lbs. ; mutton, 1,272 lbs. ; 13 crates peas ; 40 crates beans. No prosecutions were made.

During the month of April there were seized by Inspector Terry 211½ veals (7,296 lbs.) and 176 lbs. pork. Ten places where seizures were made were advertised, in accordance with the provisions of the statute. Two cases were prosecuted in court, and \$96.20 were collected in fines and costs.

. RENDERING.

In November last Messrs. C. F. Bowker & Co. petitioned this Board for permission to occupy a building on Kemble street, as a rendering establishment. A large number of residents in the neighborhood remonstrated against the granting of the petition, and a hearing was had at which both the petitioners and remonstrants appeared with counsel and a large number of witnesses. A regulation of the Board provides that the trade of rendering tallow or other refuse animal matter shall not be carried on within the limits of the city, except on the islands of the harbor, or at the Abattoir in the Brighton

District, or at such other place or places as may hereafter be assigned by the Board of Health. After a full hearing on the petition of Messrs. Bowker & Co., permission to carry on the rendering business at the place asked for was refused. Subsequently complaint was made that Messrs. O. H. Leach & Co. were maintaining a nuisance at their rendering establishment, on Magazine Lane, off Norfolk avenue. Messrs. Oscar Foote & Co., who occupied the same premises for similar purposes previous to Messrs. Leach, were prohibited from rendering by the order of Board of Health. They appealed from the order; but the court affirmed the order, except so far as it related to the rendering of pure tallow. So long as Messrs. Foote & Co., and their successors, Messrs. Leach & Co., confined their business to the rendering of pure tallow, they could not be interfered with; but investigation showed that they were rendering house-grease and bones, contrary to the order of this Board. It was also shown that Messrs. Leach & Co. had not the proper appliance for conducting the rendering business, without causing serious annoyance to the neighborhood. A hearing was had in February, and an order was issued directing Messrs. Leach & Co. to discontinue rendering at the establishment on and after April 1st, and the order was complied with. Even with the most improved appliances for conducting this business, it is difficult to carry it on in a thickly settled section without occasioning a more or less serious nuisance, and the Board has thought it proper to enforce its regulations on this subject with the utmost rigor. It is hoped that the time is not far distant when all business of this nature will be conducted outside the limits of the city.

QUARANTINE.

On account of an unusual prevalence of contagious diseases in many foreign ports last season, and the consequent liability to an introduction of the same into this country, the inspection of vessels at this port was begun on the 15th day of May instead of the 1st day of June, as has been the cus-

tom heretofore, and ended on the 1st of November. During this period six hundred and twenty-eight vessels were inspected by the port physician; eighteen of which required detention and cleansing. Six of them had sickness of a quarantinable nature on board, at the time of arrival or on the passage, and the remaining twelve were unclean, or suspected of being infected, and were subjected, like the others, to a few hours' delay and cleansing.

Pursuant to an act of Congress approved June 2, 1879, authorizing the National Board of Health, with the approval of the President, to make regulations for the better protection of this country against the introduction of contagious diseases, the following regulations were made by the National Board of Health, approved by the President, and published in November last:—

1. That all persons coming from or through any foreign port or place in which small-pox exists, who, after the 14th day of November, 1881, shall arrive at any port of entry within the United States, shall be subjected to examination as regards to their protection from that disease by the proper health authorities of the State within which such port lies; or in case such authorities shall fail or refuse to enforce this rule, then by some officer or other proper person to be designated by the President of the United States.

2. That in case any person so arriving shall refuse to submit to such examination, or upon undergoing the same shall be found not sufficiently protected from small-pox, such person, and in case he or she be not *sui juris*, then also the person having him or her under charge, shall be detained in quarantine until he or she shall have been properly vaccinated, or shall have passed the period of incubation from date of last exposure.

All merchant ships and vessels sailing from a foreign port where contagious or infectious disease exists, for any port of the United States, must obtain from the consul, vice-consul, or other consular officer of the United States at the port of departure, or from the medical officer, where such office has been detailed by the President of the United States for that purpose, a bill of health in duplicate, which shall set forth the sanitary history of said vessel, and that it has in all respects complied with these rules and regulations.

In the furtherance of the above regulations the Board ordered and published the following, which has been enforced since January last with satisfactory results:—

OFFICE OF THE BOARD OF HEALTH,
BOSTON, January 7, 1882.

The following rules and regulations have been adopted by the National Board of Health, and approved by the President of the United States, November 14, 1881:—

1. That all persons coming from or through any foreign port or place in which small-pox exists, who, after the 14th day of November, 1881, shall arrive at any port of entry within the United States, shall be subjected to examination as regards to their protection from that disease by the proper health authorities of the State within which such port lies; or in case such authorities shall fail or refuse to enforce this rule, then by some officer or other proper person to be designated by the President of the United States.

2. That in case any person so arriving shall refuse to submit to such examination, or upon undergoing the same shall be found not sufficiently protected from small-pox, such person, and in case he or she be not *sui juris*, then also the person having him or her under charge, shall be detained in quarantine until he or she shall have been properly vaccinated, or shall have passed the period of incubation from date of last exposure.

Attention is also respectfully called to the following rule and regulation of the National Board of Health:—

All merchant ships and vessels sailing from a foreign port where contagious or infectious disease exists, for any port of the United States, must obtain from the consul, vice-consul, or other consular officer of the United States at the port of departure, or from the medical officer, where such officer has been detailed by the President of the United States for that purpose, a bill of health in duplicate, which shall set forth the sanitary history of said vessel, and that it has in all respects complied with these rules and regulations.

To secure the enforcement of the foregoing rules and regulations, and the more effectually to protect the public from the introduction of small-pox from passenger vessels entering this port from any foreign port or place, it is

Ordered, That bills of health be required by the quarantine officers at this port in conformity with the above regulations.

That all immigrants, on arrival at quarantine, be subjected to examination, as regards their protection from small-pox.

That all persons under ten years of age who have not been successfully vaccinated, and all persons over ten years of age who have not recently been successfully vaccinated or revaccinated, be considered as unprotected from the effect of the contagion of small-pox, persons having had an attack of small-pox excepted.

That all persons not protected be vaccinated or subjected to a quaran-

tine of observation, and for each vaccination the port physician shall impose and collect the sum of twenty-five cents, to be by him paid to the City Treasurer.

By order of the Board of Health,

S. H. DURGIN,
Chairman.

The amount of work performed under the above additional regulation will be found detailed in the appended report of the Port Physician.

DR. GREEN'S RETIREMENT.

In December last Dr. Samuel A. Green, City Physician, resigned his office, having been elected Mayor of the city. Dr. Green had completed the eleventh year of his service as City Physician, having been elected to that office by the City Council two years previous to the establishment of the Board of Health. The able and faithful manner in which he had discharged the duties of his office and the pleasant relations existing between Dr. Green and this Board, made his resignation the occasion of deep regrets, which, however, were mingled with cordial congratulations upon the higher honor conferred upon him by the suffrages of his fellow-citizens.

Dr. Green's resignation was the occasion of the following correspondence : —

OFFICE OF THE BOARD OF HEALTH,
BOSTON, December 22, 1881.

To the Board of Health : —

GENTLEMEN, — I have the honor to tender my resignation of the office of City Physician, to take effect January 1, 1882. I cannot do so, however, without expressing my warm appreciation of the many acts of kindness and consideration I have received at your hands.

Very respectfully,

SAMUEL A. GREEN.

OFFICE OF THE BOARD OF HEALTH,
BOSTON, December 23, 1882.

SAMUEL A. GREEN, M.D., *City Physician* : —

DEAR SIR, — The Board of Health acknowledges with regret the receipt of your resignation of the office of City Physician, and the same

is accepted, to take effect January 1, 1882. In parting with your services this Board desires to testify to the ability and fidelity with which you have discharged the duties of your office, and to tender to you, personally and officially, its congratulations and best wishes for your success in the larger field of usefulness to which you have been called.

Very respectfully,

SAMUEL H. DURGIN,
JAMES M. KEITH,
GEORGE F. BABBITT.

Dr. John H. McCollom, for ten years the experienced and faithful Assistant City Physician, was chosen to succeed Dr. Green as City Physician, and Dr. Morton H. Prince was chosen Assistant City Physician in place of Dr. McCollom, promoted.

APPOINTMENTS.

In March, Mr. George F. Babbitt was reappointed by the Mayor a member of this Board for three years from the first Monday in May, 1882, and the appointment was confirmed by the City Council.

On May 2d, Dr. Samuel H. Durgin was chosen Chairman of the Board.

On May 2d, Mr. Charles E. Davis, Jr., was chosen Clerk of the Board.

In April, the following officers were reappointed for the ensuing year, beginning the first Monday in May :—

Dr. John H. McCollom as City Physician, George W. Forristall as Superintendent of Health, Dr. Alfred B. Heath as Port Physician.

SAMUEL H. DURGIN,
Chairman.
GEORGE F. BABBITT.
JAMES M. KEITH.

FINANCIAL STATEMENT.

The amount of appropriation granted for the Board of Health at the beginning of the year for the year ending April 30, 1882, was \$63,000. Subsequently an extra appropriation of \$10,000 was granted, on account of the increase of small-pox and for the purpose of free vaccination, making a total of \$73,000, which was expended as follows :—

Board of Health (salaries)	\$9,000 00
Clerk-hire	7,099 00
Inspectors of nuisances	11,264 00
Horse and vehicle, Board of Health . .	366 70
Stationery	212 98
Printing	951 04
Advertising	96 84
Abatement of nuisances	8,700 36
Contagious diseases	14,989 54
Public urinals	3,950 50
Burial-grounds	4,227 14
City Physician and Assistant	4,180 00
Inspector of Provisions	1,500 00
Inspector at Abattoir	1,500 00
Horse and vehicle, City Physician . .	1,050 90
Contingencies	2,342 77
Total	\$71,431 77
 Balance unexpended	 \$1,568 23
 The amount appropriated for quarantine was .	 \$14,400 00
Expended	\$14,400 00

The amount appropriated for Evergreen Cemetery	\$1,500 00
Balance from last year	165 00
Income	600 00
	<hr/>
	\$2,265 00
Expended	2,210 22
	<hr/>
Balance	\$54 78

RECAPITULATION.

Amount appropriated : —

Board of Health	\$73,000 00
Public Baths	12,000 00
Evergreen Cemetery	2,265 00
Quarantine	14,400 00
	<hr/>
	\$101,665 00
Amount expended	100,041 99
	<hr/>
Balance unexpended	\$1,623 01

Amount appropriated for Public Baths, \$12,000, which sum was expended as follows : —

Employés	\$8,608 25
Rents of bathing beaches	1,139 55
Lumber	951 43
Hardware	310 77
Pile-driving	208 25
Use of horse and wagon	118 23
Paint	110 98
Furniture, etc.	102 31
Ice	100 75
	<hr/>
<i>Carried forward,</i>	\$11,650 52

<i>Brought forward,</i>	\$11,650 52
Water-rates	90 00
Casks	78 54
Other expenses	180 94
	<hr/>
	\$12,000 00

INCOME.

Board of Health	416 60
Quarantine	4,120 00
Evergreen Cemetery	600 00
	<hr/>
	\$5,136 60

SPECIAL APPROPRIATION.

For the abatement of a nuisance in the Clapp- street territory	\$2,000 00
Expended	1,531 63
	<hr/>
Unexpended	\$468 37

CITY PHYSICIAN'S REPORT.

CITY PHYSICIAN'S OFFICE, May 1, 1882.

To the Board of Health:—

GENTLEMEN,—I have the honor to submit the following report of this office for the year ending April 30, 1882: There have been 12,001 persons vaccinated. Certificates of vaccination have been given to 1,284 children for their admission to the public schools. Ten physicians have been gratuitously supplied with humanized vaccine virus. In every instance where cases of small-pox have been reported, the inmates of the various houses, and all those in the immediate vicinity exposed to the contagion, have been vaccinated, requiring a visit to fifty houses. As nearly all were tenement-houses, occupied by many families, the number vaccinated in this way was quite large: Owing to the prevalence of small-pox throughout the country, and the fear entertained that the disease might spread in this city, the number applying for vaccination was the largest since the establishment of the office.

CITY TEMPORARY HOME.

There have been made two hundred and thirty-one visits to this institution, and twenty-one cases of confinement attended. Seventeen of the children were born alive, four were still-born. Seven deaths have occurred at the Home, six infants and one adult. Bronchitis caused two deaths, cholera infantum four, and peritonitis one. The patient who died from peritonitis was admitted in the evening in a state of collapse. She presented externally the appearance of pregnancy, but died before any satisfactory examination could be made. Dr. F. A. Harris, one of the medical

examiners for the County of Suffolk, made the autopsy, and found the cause of death to have been from peritonitis, resulting from the suppuration of a uterine fibroid tumor. A tabular statement of the diseases treated at the Home will be found appended.

SUFFOLK COUNTY JAIL.

The health of the inmates of this institution has been remarkably good during the year. Four hundred and ninety-five patients have been treated, requiring 1,553 visits. A statement of the diseases will be found appended. One death occurred caused indirectly by delirium tremens. The patient who, had been sick only a short time, died very suddenly, probably from the formation of a heart-clot. There was no autopsy. Three patients, exhibiting unmistakable signs of mental alienation, were sent to an insane asylum. Three cases were removed to the City Hospital, it being inadvisable to treat them in prison. One was a case of severe injury to the back, one was a case of typhoid fever, and the other a case of pancreatic apoplexy.

One hundred and seven men have been examined for appointment on the police force, and seventeen for retirement. Seventy-five men have been examined, at the request of the Board of Fire Commissioners, for appointment in the Fire Department, and eighteen cases of supposed disease or injury have been investigated. One hundred and twenty-four reports of small-pox have been investigated. Sixty-five of these cases were found to be small-pox, and 61 of them were removed to the hospital on Canterbury street. The four cases treated at their homes could be properly isolated, and, therefore, were not removed. The statement of the remaining 59 reported cases is as follows: Varicella, 28 cases; no disease, 8; eczema, 3; syphilis, 3; tinea favosa, 2; three cases of measles; vaccinal urticaria, 2; typhoid fever, 2; tonsillitis, 1; one case of the eruption due to the use of iodide of potassium; the use of copaiba, 1; abscess, 1, and scarlet fever 4.



One case of variola equina, occurring in a man who had the care of sick horses, was observed. This case occurred in the practice of Dr. Hartnett. The man was forty years of age, and had the charge of horses that had a peculiar discharge from the nose. The patient had accidentally inoculated himself with the discharge from the nostrils of these horses. On the face the disease was confluent, therefore the characteristic appearances of the disease were not apparent; but on the side of the neck and on the forehead well-marked, button-like umbilicated spots with distinct areolæ were seen. There was no eruption on the arms, legs, or chest. The constitutional disturbance was comparatively slight.

One other case of interest in connection with the subject of small-pox deserves mention. A healthy woman, the mother of two children, was vaccinated Feb. 13th, with bovine virus, by her family physician, Dr. J. T. Harris, of the Roxbury District. On the fifth day after vaccination the patient complained of headache, had considerable fever, and in fact had the usual amount of discomfort that attends a successful revaccination. The woman was at this time nursing her infant about six months old. The child had not been vaccinated, on account of an attack of eczema. On March 1st an eruption appeared on the head, thorax, and legs of the child, who had been feverish and irritable for two or three days previous. On some portions of the body the eruption was confluent, but on the arms and thighs it presented the characteristic appearance of cow-pox. It was not an instance of accidental inoculation, for there was no possible way in which the child could have introduced the virus at so many different points. The only explanation possible is that the disease must have been contracted from the mother, through the medium of her milk. The accompanying drawing gives a good idea of the appearance of the eruption.

The bodies of 431 persons, dying without a physician, have been examined. These cases comprise principally those who die from chronic disease, where there has been no medical care for months previous to death, and those who die

suddenly from natural causes. In these cases a careful external examination is made, the symptoms learned, and a diagnosis sufficiently accurate for all practical purposes reached. The law requires a medical certificate of death before a permit is granted to bury a body ; and these examinations are made to conform to the law as well as to collect the statistics for the bills of mortality. A tabular statement of these cases is appended.

Respectfully submitted,

JOHN H. McCOLLOM,
City Physician.

**Report of Causes of Death investigated by City Physician
for the Year ending April 30, 1882.**

DISEASES.	May.	June.	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	Total.
I. — Zymotics.													
Alcoholism					1								1
Cholera Infantum			2	3	3			1					9
Cholera Morbus					1								1
Croup						1		1					2
Diarrhoea				2	3								5
Diphtheria								1					1
Dysentery	1			1									2
Enterocolitis				1									1
Rheumatism	2			1		1		2					6
Septicæmia											1		1
Whooping-cough			1	2									3
II. — Constitutional.													
Cancer				1	1					1		1	4
Consumption	2	5	7	6	9	10	8	10	11	11	10	9	98
Intestinal Tuberculosis												1	1
Marasmus	1	1		1	3	1			1		2	1	11
Tubercular Meningitis	1							1					2
III. — Local.													
Abscess	1												1
Apoplexy			1			1			1	3	5	1	12
Asthma								1					1
Bright's Disease						1	1		2		2	1	7
Bronchitis							1	1	4	3	5	4	18
Convulsions			5		1	1		2					9
Coup de soleil					1								1
Disease of brain		1				1							2
" heart		4		2	1	6	3	1	4	3	3	5	32
" kidneys							1						1
" liver	1	1											2
" spinal cord					1								1
Epilepsy						2		1					3
Injury to abdomen					1								1
<i>Carried forward</i>	9	12	16	20	26	25	14	22	23	21	28	23	236

Report of Causes of Death. — *Concluded.*

DISEASES.	May.	June.	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	Total.
<i>Carried forward</i>	9	12	16	20	26	25	14	22	23	21	23	23	239
Meningitis . . . . .	..	..	..	..	..	..	..	..	1	1	3	..	5
Nephritis	1	..	..	..	..	1	..	..	..	..	..	..	2
Paralysis . . . . .	..	1	..	..	..	..	..	..	..	..	..	..	1
Pneumonia . . . . .	..	..	..	2	1	..	..	1	1	1	8	2	16
Prostatitis	1	..	..	..	..	..	..	..	..	..	..	..	1
Pott's disease . . . . .	..	..	..	..	..	..	..	..	1	..	..	..	1
Ulcer of stomach . . . . .	..	..	..	..	..	..	..	..	..	..	1	..	1
IV.—Developmental.													
Inanition	4	6	12	10	5	7	3	5	3	1	1	2	59
Teething	1	1	2	4	..	1	..	1	..	..	..	..	10
Old age	4	1	6	2	1	6	3	4	1	3	1	4	36
Premature birth . . . . .	..	..	..	..	..	..	..	..	1	2	..	1	4
V.—Violent.													
Drowning . . . . .	..	..	..	1	..	..	..	..	..	..	1	..	2
Overlaid . . . . .	..	..	..	..	..	..	1	..	..	..	..	..	1
Poisoning from overdose of medicine . . . . .	..	..	..	..	..	..	..	..	..	..	..	1	1
Scald . . . . .	..	..	1	..	..	..	..	..	..	..	..	..	1
Unknown causes . . . . .	..	1	1	..	..	..	..	..	..	..	..	..	2
Stillbirths	5	..	4	6	4	7	3	1	11	1	3	4	49
	25	22	42	45	37	47	24	34	42	30	46	37	431

Tabular Statement of Diseases Treated at the City Temporary Home for the Year ending April 30, 1882.

DISEASES.	Treated.	Recovered.	Improved.	Sent to City Hospital.	Referred to State Agent.	Died.	Remaining.
Cholera Infantum	4	...	...	...	...	4	...
Chronic Rheumatism	4	...	1	...	3	...	...
Diphtheria	3	...	...	3	...	...	...
Febricula	5	5	...	...	...	...	...
Phthisis Pulmonalis	7	...	...	...	7	...	...
Puerperal Fever	1	1	...	...	...	...	...
Functional Diseases of Nervous System :—							
Epilepsy	2	...	...	...	2	...	...
Diseases of Intellect :—							
Mania	1	...	...	...	1	...	...
Diseases of Bronchi :—							
Acute Bronchitis	8	6	...	...	...	2	...
Diseases of Fauces :—							
Tonsillitis	2	2	...	...	...	...	...
Diseases of Intestines :—							
Constipation	6	6	...	...	...	...	...
Diarrhoea	10	8	2	...	...	...	...
Diseases of Peritoneum :—							
Peritonitis	1	...	...	...	...	1	...
Injuries :—							
Sprains	5	5	...	...	...	...	...
Contusions	8	8	...	...	...	...	...
	67	41	3	3	13	7	...

Report of the Sick at Suffolk County Jail for the Year ending April 30, 1882 : —

DISEASES.	Remaining May 1, 1881.	Treated during the year.	Recovered.	Improved.	Sent to City Hospital.	Sent to Insane Asylum.	Discharged.	Died.	Remaining April 30, 1882.
General Diseases : —									
Anæmia	1	8	...	6	...	...	8	...	...
Erysipelas . . . . .	...	6	6	...	...	...	...	...	...
Febricula	2	15	16	...	...	...	1	...	...
Intermittent Fever . . . . .	...	4	2	1	...	...	1	...	...
Remittent Fever . . . . .	...	5	3	...	...	...	2	...	...
Rheumatism, Acute . . . . .	...	6	4	2	...	...	...	...	...
Rheumatism, Chronic . . . . .	...	10	...	7	...	...	3	...	...
Typhoid Fever . . . . .	...	1	...	...	1	...	...	...	...
Phthisis Pulmonalis . . . . .	...	7	...	4	...	...	2	...	1
Diseases of Nerves : —									
Locomotor Ataxia . . . . .	...	1	...	...	...	...	1	...	...
Neurasthenia . . . . .	...	3	...	3	...	...	...	...	...
Functional Diseases of Nervous System : —									
Delirium Tremens . . . . .	...	35	34	...	...	...	1	...	...
Epilepsy . . . . .	...	2	...	...	...	...	2	...	...
Hypochondriasis . . . . .	...	3	...	...	...	...	3	...	...
Lumbago . . . . .	...	5	...	3	...	...	2	...	...
Neuralgia . . . . .	...	5	...	4	...	...	1	...	...
Diseases of Intellect : —									
Mania . . . . .	...	3	...	...	...	3	...	...	...
Diseases of the Heart : —									
Valvular . . . . .	...	4	...	...	...	...	4	...	...
Diseases of Bronchi : —									
Acute Bronchitis . . . . .	...	36	20	10	...	...	6	...	...
Chronic Bronchitis . . . . .	...	15	...	14	...	...	1	...	...
Diseases of Pleura : —									
Pleurisy . . . . .	...	2	1	1	...	...	...	...	...
<i>Carried forward</i>	3	176	86	55	1	3	32	1	1

DISEASES.	Remaining May 1, 1881.	Treated.	Recovered.	Improved.	Sent to City Hospital.	Sent to Insane Asylum.	Discharged.	Died.	Remaining April 30, 1882.
<i>Brought forward</i>	3	176	86	55	1	3	32	1	1
Diseases of Fauces:—									
Tonsillitis		16	16						
Diseases of Digestive System:—									
Colic		5	5						
Constipation		30	30						
Diarrhœa		10	10						
Gastritis, Alcoholic		5	4	1					
Pancreatic Apoplexy		1			1				
Diseases of Womb:—									
Subinvolution		1					1		
Leucorrhœa		10		7			3		
Functional Diseases of Women:—									
Menorrhagia		10		6			4		
Pregnancy		6					6		
Diseases of Pregnancy:—									
Abortion		4	4						
Diseases of Cutaneous System:—									
Acne		5		4			1		
Eczema		5		4					1
Herpes Labialis		2	2						
Onychogryphosis		1		1					
Phthiriasis		9	9						
Diseases of the Eye:—									
Conjunctivitis		5	5						
Ecchymosis		8	8						
Iritis		3		3					
Trachoma		2		1			1		
Poisons:—									
Opium Habit		3					3		
Surgical Diseases:—									
Abscess		9	9						
Fistula in ano		2					2		
<i>Carried forward</i>	3	328	188	82	2	3	53	1	2

DISEASES.	Remaining May 1, 1881.	Treated.	Recovered.	Improved.	Sent to City Hospital.	Sent to Insane Asylum.	Discharged.	Died.	Remaining April 30, 1882.
<i>Brought forward</i>	3	328	188	82	2	3	53	1	2
Hæmorrhoids	11	11	7	7	3	1	1	1	1
Gonorrhœa	25	25	12	7	5	1	1	1	1
Otitis	3	3	2	1	1	1	1	1	1
Syphilis	35	35	20	13	2	1	1	1	2
Varicose veins	8	8	8	8	8	8	8	8	8
Stricture, urethral	5	5	4	1	1	1	1	1	1
Injuries:—									
Abrasions	15	15	15	15	15	15	15	15	15
Contusions	36	36	36	36	36	36	36	36	36
Concussion of spine	1	1	1	1	1	1	1	1	1
Gunshot wounds	2	2	2	2	2	2	2	2	2
Scalp wounds	18	18	18	18	18	18	18	18	18
Sprains	8	8	8	8	8	8	8	8	8
Totals	3	495	281	121	3	3	82	1	7

PORT PHYSICIAN'S REPORT.

QUARANTINE STATION, DEER ISLAND,
BOSTON, May 1, 1882.

To the Board of Health:—

GENTLEMEN, — I herewith submit the following report of the Quarantine Department for the past year. The year has been an unusually busy one, due to the regulation, issued January 7th, ordering the vaccination of all emigrants entering this port, since which time there have been vaccinated 1,329 persons. During the year 628 vessels were inspected, eighteen of which were detained for fumigation and observation. The amount of fees collected was \$4,120. Seven patients suffering from small-pox and three from typhus fever were removed to Gallop's Island Hospital for treatment; twenty-three were removed to the hospital for observation. One case of small-pox — a child five months old — proved fatal; also one person removed for observation died from dysentery. Prior to the issuing of the regulation of January 7th there had been vaccinated 822 persons, entering the port in infected vessels.

The buildings on Gallop's Island, also the steamer "Samuel Little," are in excellent condition. The only addition needed on the Island is a storehouse, in which an infected cargo could be temporarily placed, should it be necessary to do so.

The vessels inspected hailed from the following places and ports:—

West Indies	.	.	257	Westhartlepool	.	.	4
Liverpool	.	.	75	Cuba	.	.	27
London	.	.	35	East Indies	.	.	23
Glasgow	.	.	18	Africa	.	.	10
Hull	.	.	9	South America	.	.	26

Italy	4	Holland	4
Russia	3	Germany	3
France	13	Sweden	3
Spain	7	Gibraltar	3
Egypt	1	Coastwise	89
Cape de Verde Islands,	4		
Azores	5	Total	628
Belgium	5		

One steamer from Liverpool brought three cases of small-pox; another two cases. A steamer from Cuba brought three cases typhus fever. No changes have been made in the medical staff during the year. I am indebted to Colonel Guy C. Underwood, Superintendent of the Deer Island institutions, for many favors and acts of courtesy. In conclusion, it gives me great pleasure to acknowledge the many acts of courtesy and kindness, both official and personal, which I have received from the members of your Board.

Respectfully submitted,

A. B. HEATH,

Port Physician.

REPORT OF SUPERINTENDENT OF HEALTH.

HEALTH OFFICE, 32 PEMBERTON SQ.

May 1, 1882.

To the Honorable Board of Health:—

GENTLEMEN,—In conformity with Section 9 of an ordinance relating to the Public Health, I herewith submit my report of the expenses of this department for the year ending April 30, 1882:—

Amount appropriated, 1881	\$345,000 00
Amount expended	340,552 98
	<hr/>
Balance May 1, 1882	\$4,447 02
	<hr/> <hr/>

The above amount, \$340,552.98, was expended as follows:—

For labor in collecting and removing house dirt and ashes in city proper, South Boston, Dorchester, Highlands, W. Roxbury, and Charlestown	\$97,390 10
For labor in sweeping and cleaning the streets, and the removal of snow and ice from public walks, yards, and squares	76,399 36
For labor in collection and removal of household refuse from hotels, houses, stores, restaurants, in city proper, South Boston, Dorchester, Highlands, and Charlestown	57,705 55
Paid foremen, feeders, wheelwrights, blacksmiths, painters, harness-makers, watchmen, and drivers of prison carriages	20,636 08
	<hr/>
<i>Amount carried forward</i>	<i>\$252,131 09</i>

<i>Amount brought forward</i>	\$252,131 09
For grain used at City Stables, south and west, Boston Highlands, and Charlestown	16,448 18
For labor in cleaning cesspools, in city proper, East Boston, South Boston, Charlestown, Highlands, West Roxbury, and Dorchester	11,076 11
New horses and exchanges	12,040 00
Hay and straw at City Stables, South and West, Boston Highlands, and Charlestown	9,526 92
Official pay-roll, including Milk Inspector's office	9,150 00
For the collection and removal of ashes in East Boston	5,941 50
For stock and tools in blacksmith shop	3,491 96
For extra team work in collecting ashes	3,193 99
For the collection of house-offal in East Boston, West Roxbury, and Brighton	2,575 00
For stock and tools in wheelwright shop	2,350 81

Incidental expenses as follows :—

Refreshments and carriage-hire	\$802 00
Rentage and repairs on telephone	254 64
Edward Carnes, for care and dis- posal of house-offal in Charles- town	237 50
Paid J. F. Kennard for services rendered in care of telephone	180 50
For new sleigh, to replace one destroyed by runaway city team,	125 00
Stabling for baiting horses in East Boston and W. Roxbury	82 23
Expense of official visit to New York	46 50
For bits, collars, whips, and moulding	42 84

Amounts carried forward, \$1,771 27 \$327,925 56

<i>Amounts brought forward,</i>	\$1,771 21	\$327,925 56
Buffalo-robe, horse covers, and nets	40 90	
Repairing fence damaged by city team, on W. Newton street . .	40 27	
Stove funnel, grates, and linings .	33 12	
For molasses, flour, vinegar, salt, matches, mustard, etc., for stable uses	29 05	
Directories for office and stables .	23 00	
Locks, butts, nails, and screws .	24 92	
Washing, bedding, and towels for City Stables and office . . .	19 00	
For new top to buggy	15 00	
One case toilet paper	13 50	
Daily Advertiser for office	12 00	
For two leather bags	10 00	
Washing floors at office	8 00	
Watering in front of office	7 50	
New England Dial for office	6 60	
Fairbanks scales	6 50	
Ice for office use	6 25	
Sheeting and drilling	7 88	
Feather dusters	5 50	
Damage to coupé by city team . . .	5 00	
Two casks of lime	2 50	
Glazed sash	2 25	
Hooks, rings, and chain	1 92	
Blacking	3 30	
Brushes	1 75	
Repairing clock	1 50	
Repairs on cart	1 25	
	<hr/>	2,099 67
Fuel and gas for City Stables . . .		1,388 96
Shovels, pick handles, street hoes, broom cord, etc. (Street Dept.)		1,051 46
		<hr/>
<i>Carried forward,</i>		\$332,465 65



<i>Brought forward,</i>	\$332,465 65
Stable stock, consisting of brushes, sponge, soap, blankets, curry-combs, and manure forks, etc.	1,068 50
Stock and tools for harness-shop	1,224 62
Water tax	985 83
Repairs on stables	669 71
Milk Inspector's Dept., analysis of milk, advertising, and stationery	391 42
Broom stock, for sweeping streets	656 54
Medical attendance on horses, and horse medicines	611 28
Sawing and planing cesspool and other stock	330 68
Paints, oils, varnish, and brushes	354 28
Lumber for cesspool stock	411 45
Shoeing horses, West-End stable and Charlestown	430 11
Canvas for covering carts and baskets for collecting ashes	386 62
East Boston ferry passes, men and teams	215 00
Printing and advertising	200 78
Stationery for office and stable use	132 24
Offal buckets, etc.	18 27
Total	<u>\$340,552 98</u>

The amount paid into the City Treasury, and credited this department for material sold during the year, is as follows:—

Sale of house-offal	\$27,511 33
Sale of ashes	4,257 90
Removal of ashes	2,998 76
Conveying prisoners	4,214 00
Sale of street dirt	1,741 69
Sale of manure	976 99

<i>Carried forward,</i>	<u>\$41,700 67</u>
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<i>Brought forward.</i>	\$41,700 67
Milk Inspector's fees	311 00
Sale of old material	299 47
Labor	10 50
	<hr/>
	\$42,321 64

PRISON CARRIAGES.

There have been conveyed during the past year, from the several police stations to the City Prison, under the Court-House, 13,512 males, 3,344 females, and for which the Police Department is charged 25 cents per head.

There have been conveyed, during the past year (without charge), county prisoners as follows : —

From Court-House to Jail	1,796
“ Jail to Court-House	818
“ Court-House to House of Correction	655
“ Court-House to steamer “J. P. Bradlee”	8,160
“ East Boston to steamer “J. P. Bradlee”	316
“ East Boston to Jail	96
“ Jail to East Boston	43
“ East Boston to House of Correction	16
“ Court-House to Boston & Albany Railroad	40
“ South Boston to boat	583
“ South Boston to Jail	182
	<hr/>
Total number conveyed	12,705

ASHES, STREET DIRT, ETC.

Collected by city teams for the year : —

Total number of loads of ashes	153,782
“ “ “ “ street dirt	54,325
“ “ “ “ house-offal	29,379
“ “ “ “ cesspool matter	9,521
	<hr/>
Total loads	247,017

Vehicles owned and employed by this department : —

Number of ash carts	.	.	.	.	.	.	63
“ offal wagons	.	.	.	.	.	.	43
“ street carts	.	.	.	.	.	.	29
“ cesspool wagons	.	.	.	.	.	.	14
“ sweeping machines	.	.	.	.	.	.	9
“ water carts	.	.	.	.	.	.	6
“ market wagons	.	.	.	.	.	.	1
“ prison carriages	.	.	.	.	.	.	3

STREETS.

There are employed in sweeping and cleaning the streets 157 men, 29 carts, 9 sweeping machines, and 6 water carts. There are 76 men employed 9 months in the year sweeping. The principal streets are cleaned daily, and others twice in each week. The remaining three months the teams are employed in removing house-dirt, and the men in sweeping crossings and removing snow from sidewalks of public buildings. The number of miles of streets cleaned, 185 per week. The cost of labor for doing this work for the year ending April 21, 1882, \$76,399.36.

HOUSE-OFFAL.

There are employed in removing house-offal 95 men and 43 wagons. The offal is removed from dwelling-houses three times a week during the summer months, and twice a week during the winter ; from hotels, markets, and restaurants it is removed daily. There are 43 districts, and each team is assigned a route. The men employed in collecting offal are required to enter the premises, collect the offal, and empty the same in wagons ; when filled to drive to one of the offal-depots owned by the city. It is there sold to farmers from adjoining towns within a radius of 20 miles, who come with their carts to the depot for it.

The cost of labor for this work, ending April 21, 1882, \$57,705.55.

HOUSE-DIRT AND ASHES.

There are employed in removing house-dirt and ashes 58 teams and 123 men with 2 men to each team. This material is removed from hotels, tenement-houses, and stores twice in each week, and from dwellings once a week. There are 58 routes, one team being assigned to each route.

The ordinances require that house-dirt and ashes shall be kept in some convenient place for collection. The men are required to enter the premises and place such vessels as contain ashes upon the sidewalk or in passage-ways in rear, the teams follow and are loaded, the empty vessels are returned by the men to their original position. The carts when filled proceed to the dump and discharge their load.

Bills for the sale of ashes are forwarded to the Collector.

The cost of labor for doing this work for the year ending April 21, 1882, \$97,390.10.

CESSPOOLS.

There are employed in cleaning cesspools 30 men and 14 wagons; they are cleaned as often as required, and their contents conveyed to a dump, and immediately covered with ashes. The cost of labor for this work, ending April 21st, 1882, \$11,076.11.

MECHANICS.

There are employed 13 mechanics in manufacturing wagons and harnesses, and shoeing horses.

HORSE STOCK ACCOUNT.

1881.			1881.		
May 1.	On hand,	209	Apl. 27.	Exchanged,	2
Apl. 21.	Bought	3	May 2.	Killed,	1
" 27.	"	1	" 3.	"	1
May 17.	"	3	" 3.	Died,	1
July 1.	"	1	" 10.	Cedar Grove,	2
July 25.	"	1	" 15.	Died,	1
Aug. 20.	"	2	" 17.	Exchanged,	2
Oct. 1.	"	2	June 10.	Killed,	1
" 15.	"	1	" 12.	Died,	1
Nov. 1.	"	1	July 15.	Killed,	1
" 16.	"	2	" 20.	"	1
" 25.	"	1	Aug. 3.	Died,	1
Dec. 6.	"	1	" 20.	Exchanged,	2
" 16.	"	1	Sept. 8.	Killed,	1
1882.			" 8.	Died,	1
Jan. 19.	"	4	Oct. 15.	Sold,	1
Feb. 25.	"	3	" 26.	Died,	1
Mar. 7.	"	2	Nov. 16.	Exchanged,	1
" 20.	"	5	" 25.	Killed,	1
" 23.	"	1	" 29.	Died,	1
			Dec. 25.	Killed,	1
			1882.		
			Jan. 12.	"	1
			" 19.	Exchanged,	2
			Apl. 6.	Died,	1
			Mar. 23.	"	1
			May 1.	On hand,	214
		244			244

Respectfully submitted,

GEO. W. FORRISTALL,
Superintendent.

SCHEDULE OF CITY PROPERTY

AT THE SOUTH, WEST, BOSTON HIGHLANDS, AND CHARLES-
TOWN STABLES.

214 horses, with harnesses . . .	at \$225 00	\$48,150 00
4 express harnesses . . .	" 25 00	100 00
12 light harnesses . . .	" 25 00	300 00
4 spare lead harnesses . . .	" 15 00	60 00
3 breast harnesses . . .		10 00
49 collars . . .	" 1 00	49 00
47 pair hames . . .	" 5 00	235 00
1 hoisting harness . . .		20 00
223 halters . . .	" 1 00	223 00
165 strings sleigh-bells . . .	" 75	123 75
46 shaft girths . . .	" 1 50	69 00
8 pair reins . . .	" 1 40	11 20
20 sweat collars . . .	" 1 12	22 40
23 collar pads . . .	" 20	4 60
12 horse slings . . .		10 00
1 leather horse sling . . .		25 00
16 new cart breechings . . .	" 8 75	140 00
8 new cart saddles . . .	" 18 00	144 00
9 old cart saddles . . .	" 3 00	27 00
10 offal breechings . . .	" 7 00	70 00
4 rubber horse covers and 3 oil do.		10 00
14 pair new blinkers . . .	" 3 25	45 50
10 martingales . . .	" 78	7 80
3 check-reins . . .	" 60	1 80
5 new bridles . . .	" 5 00	25 00
1 new light harness . . .		85 00
1 lot sweeping machine patterns "		15 00

4 oil cups	at		50
20 lbs. bass	"	13	\$2 60
1 hay-cutter for cutting bass			10 00
9 water carts	"	\$150 00	1,350 00
190 offal chisels	"	1 50	285 00
109 offal buckets	"	50	63 25
3 offal tubs	"	1 50	4 50
17 offal chisel handles	"	25	4 25
40 doz. offal bucket cars	"	12	4 80
1 ice plane			\$2 00
6 water pots			5 00
4 goosenecks	"		24 00
7,144 bundles broom stuff		07	500 08
41 baskets			10 00
4 4-bushel baskets	"	1 50	6 00
51 ice chisels	"	2 00	102 00
39 dipping poles	"	2 00	78 00
62 cesspool hooks	"	1 25	77 50
14 cesspool tools, per set	"	3 00	42 00
40 lbs. axle grease	"	08	3 20
5 tool houses	"	15 00	75 00
6 lanterns			3 00
84 cart covers	"	1 00	84 00
68 cart covers, new	"	2 50	170 00
1 clipping machine			3 00
24 ²⁵⁴ / ₂₀₀₀ tons hay, per ton	"	20 00	482 54
16 ⁹⁰⁵ / ₂₀₀₀ tons straw	"	19 00	312 59
706 bushels oats	"	61	430 66
33 bushels meal	"	72	23 76
148 old street hoes	"	25	37 00
46 steel and iron shovels, new, per doz. . . .	"	14 25	54 62
296 steel and iron shovels, old	"	50	148 00
306 steel shovels	"	75	229 50
87 hoes	"	75	65 25
5 haycutters	"	10 00	50 00
8 six-tined forks	"	2 00	16 00
193 water pails	"	50	96 50

31 manure forks	at	25	\$7 75
27 hay forks	"	75	20 25
6 pair steps	"	3 00	18 00
1 staging			20 00
2 window frames			5 00
1 spare tool chest			5 00
2 spare grain chest			30 00
34 manure hooks	"	50	17 00
4 feed troughs and tools			100 00
lot house medicines			5 00
2 wheelbarrows			5 00
Rubber hose (lots 3)			15 00
Leather hose (40 feet)			20 00
5 tackle and falls			75 00
63 lbs. sponge	"	2 25	141 75
2 dust brushes			1 00
2 saddle trees	"	2 25	4 50
50 yards burlap	"	12	6 00
23 hame straps	"	22	5 06
214 woollen blankets	"	2 00	428 00
136 carts for collecting ashes and street dirt	"	75 00	10,230 00
59 one-horse wagons, for collecting house-offal	"	125 00	7,375 00
15 one-horse cesspool wagons	"	125 00	1,875 00
5 express wagons	"	50 00	250 00
2 open offal wagons	"	50 00	100 00
35 cart wrenches	"	1 50	52 50
6 vehicles for carrying prisoners			1,200 00
8 open wagons	"	75 00	600 00
1 hay rigging			75 00
3 top buggies			150 00
2 covered carriages			150 00
167 sleds for conveying ashes and offal	"	40 00	6,680 00
8 sleighs	"	60 00	480 00
3 pungs			25 00
2 hand sleds for removing snow	"	3 00	6 00

12 drag boxes for removing snow, at	\$1 00	\$12 00
72 snow drags "	75	54 00
1 snow plough		10 00
17 sweeping machines . . . "	125 00	21 25
30 lbs. No. 2 reeds . . . "	20	6 00
12 brushrolls, filled, with flanges "	26 75	321 00
4 brush rolls without flanges		30 00
6 lbs. brace thread . . . "	40	2 40
10 gallons neat's-foot oil . . "	90	9 00
2 furnaces and copper boilers		75 00
5 hoisting blocks		8 00
1 copper boiler		10 00
4 gas lighters		4 00
2 dripping pans		10 00
8 4 tined forks "	1 00	18 00
10 hay hooks "	25	2 50
7 galvanized iron hods . . .		2 00
224 currycombs and brushes (lot)		50 00
1521 lbs. copperas "	01½	22 81
3 iron bedsteads		10 00
10 beetles "	75	7 50
7 iron wedges "	50	3 50
1 galvanized furnace boiler and stove		125 00
2 coal screens		20 00
2 feather dusters		1 00
6 ladders "	3 00	18 00
7 grease jacks "		14 00
2 watch clocks "	25 00	50 00
10 hydrant wrenches . . . "	3 00	30 00
4 composition hydrant chucks		2 00
4 carriage covers "	5 00	20 00
Stock of tools in wheel- wright's shop		125 00
264 cesspool covers "	1 00	264 00
400 broom handles "	30	120 00
140 offal bucket bottoms . . . "	06¼	8 75
5½ doz. new offal buckets . . "	8 00	44 00

2 doz. bucket handles . . . at	75	\$1 50
106 old cart hind boards . . . "	50	53 00
2 brass flanges for offal wagons		6 00
5634 feet oak boards . . . "	\$50 00 pr. M.	281 70
1845 feet cypress boards . . . "	40 00 pr. M.	73 80
138 mauls "	25	34 50
428 scrapers "	10	42 80
797 feet hickory "	10	79 70
1 set light wheels		25 00
99 hubs "	1 00	99 00
2000 feet unfinished stock . . . "	10	200 00
316 felloes "	16	50 56
1209 spokes "	15	181 35
9977 feet Canada pine "	70 00 pr. M.	698 39
3½ sets offal wagon wheels . . .		125 00
3 sets buggy hubs "	1 25	3 75
1 pair cart wheels "		35 00
4 sets light rims "	2 75	11 00
100 light spokes "	08	8 00
18 lock sticks "	75	13 50
23 pairs finished shafts "	5 00	115 00
3 steam boxes "		25 90
27 hind board to carts "	2 25	60 75
4 grindstones		10 00
1 pair hub rammers		20 00
1 lot old wheels		10 00
1 set iron hub offal wheels . . .		33 00
400 feet hard pine sheathing . . . "	50 00 pr. M.	20 00
½ bbl. hard pine wedges "		5 00
1453 feet of ash "	8 00	116 24
535 feet of spruce planks "	17 00 pr. M.	9 09
1 doz. hammer handles		1 25
2½ doz. 14-inch circles		5 00
21 crowbars "	2 00	42 00
44 pickaxes "	1 50	66 00
450 lbs. iron gutters "	03	13 50
571 lbs. cart and wagon axles "	06½	35 65
725 lbs. wagon springs "	02	14 50

1832 lbs. patent shoes . . . at	04 $\frac{1}{2}$	\$82 44
262 lbs. shoe nails . . . "	24	62 88
102 lbs. cast steel . . . "	14 $\frac{1}{2}$	14 79
9277 lbs. refined iron . . . "	03 $\frac{1}{8}$	309 23
609 lbs. Norway iron . . . "	05 $\frac{1}{8}$	31 13
1797 lbs. corking steel . . . "	07 $\frac{1}{2}$	134 77
1005 lbs. band iron . . . "	03 $\frac{1}{2}$	35 17
196 lbs. cast-iron sled shoes . . . "	04	7 84
79 lbs. spring steel . . . "	07 $\frac{1}{2}$	5 92
6982 lbs. horse-shoe iron pr. lb. "	03 $\frac{5}{8}$	253 10
5324 lbs. sharpened shoes (new) "	12 $\frac{1}{2}$	665 50
2707 lbs. toed and heeled shoes (new) "	10	270 70
2648 lbs. smooth shoes (new) . . . "	08	211 84
189 lbs. bar shoes (new) . . . "	14	26 46
3 sets brand irons "		5 00
1 farrier's knife		1 00
1603 3-inch dog nails "	62 $\frac{1}{2}$ per hd.,	10 01
3 sets numbers		5 00
1 wheel machine		20 00
1 boring machine		20 00
1 tire upsetter		20 00
1 tire bender		10 00
Bolts, rivets, and lag-screws (lot)		20 26
Horse-rasps and files		30 00
1 drilling machine		10 00
1 set small scales		6 00
1 platform scale		25 00
117 lbs. castings "	04	4 68
4 letter dies "	50	2 00
2 iron rakes "	50	1 00
12223 lbs. combination tire iron, 2 \times $\frac{3}{4}$ at 3 2-10,		391 13
20 lbs. blank nuts "	04 $\frac{1}{2}$	90
15 lbs. gray sand castings "	06	90
98 oval head rivets "	25	24 50
23 lbs. open link chain "	15	3 45
83 lbs. tire steel "	04	3 32

373 old nuts and boxes . . . at	01	\$3 73
2 cross-cut saws . . .		10 00
378 lbs. cold rolled iron . . . "	09 $\frac{1}{2}$	31 58
1987 lbs. odds and ends of iron . . . "	00 $\frac{1}{4}$	49 67
E. C. bolts (lot) . . .		25 40
Lot washers . . .		1 12
Stock and tools in harness shop,		150 00
Office furniture, beds, bedding,		
etc., of stables, South, West,		
Boston Highlands, and Charles-		
town		250 00
6 pieces ticking . . .		40 00
7 bags salt "	\$1 50	10 50
10 prs. cesspool boots . . . "	5 00	50 00
260 grain bags "	25	65 00
4 poultice boots "	3 00	12 00
11 street blankets "	3 00	33 00
Stock and tools in paint-shop		280 50
10 carriage weights "	1 00	10 00
2 muzzles "	2 00	4 00
6 horse dusters		5 00
21 new blankets, carpeting . . . "	4 00	84 00
11 knee robes		20 00
10 buffalo robes		50 00
150 lbs. buffalo hair "	18	27 00
1 hoisting gear		10 00
1 hand cart		10 00
1 boring lathe		10 00
1 pr. shears		1 50
2 set broom sprinklers . . .		5 00
2333 trimmed brooms "	32	714 56
1 bbl. pitch pine		5 00

\$93,868 68

